

to the Editor of the Edinburgh
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OBSERVATIONS
IN
SURGERY AND PATHOLOGY;
ILLUSTRATED BY CASES,
AND BY THE
TREATMENT OF SOME OF THE MOST
IMPORTANT SURGICAL AFFECTIONS,

BY
WILLIAM JAMES CLEMENT,
SURGEON.

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INTRODUCTION.

SHOULD any apology be required for the publication of this work, it will, I trust, be found in the great practical importance of the subjects on which the following observations are founded. At the same time, I hope to be excused from any feeling of presumption, in attempting to treat of those affections whose nature and peculiarities have been elucidated by writers to whom we are principally indebted for that progress towards improvement and perfection so evident of late years in the science of surgery.

There are, however, many diseases on which so much difference of opinion exists, not only in regard to their nature, but in reference also to their treatment, that they seem to require additional illustration, which is valuable and satisfactory only when derived from practical knowledge and experience.

The surgeon who is extensively engaged in the duties of his profession, will soon discover that numerous theories, which during the prosecution of his preparatory studies he considered most plausible and even substantially correct, will not bear the test of actual practice. He will frequently find, that either his theory is incorrect, or, at least, that his practice to be successful cannot always accord with certain rules and principles once considered by him as unerring guides.

It is, indeed, from well-grounded reasoning and analogical inductions that those discoveries have been made and alterations suggested, which have contributed most materially to the advancement of modern surgery. I have, however, in the course of my practice, been convinced that several existing theories on the function of different organs, and many opinions concerning the nature of the diseases affecting them, are not founded upon a correct observance of the natural actions of the parts, or of

the phenomena exhibited by their morbid condition.

This observation applies more particularly to that subject of which I propose first to treat, namely, the Anatomy and Physiology of the Urethra.

The profession has long been divided in opinion as to the real structure of the membrane of the urethra; but the majority, I believe, are in favour of its muscularity.

This doctrine has been established principally upon the authority of Sir Everard Home; and although that excellent and philosophical surgeon will always be considered one of the greatest ornaments of the profession, yet I feel convinced, that his elaborate work on affections of the urethra, may lead to much practical error, because the author inculcates those principles of treatment which, in my humble opinion, are founded on incorrect notions of the anatomical structure of the part.

I have, therefore, attempted to shew my

reasons for differing from his opinions by a reference to the works of the most celebrated anatomists ; and have contrasted the sentiments of the advocates for the doctrine of the muscularity of the urethra, with those of the opponents to it:—If in pursuing the enquiry I have been obliged to make frequent comments on the opinions entertained by Sir Everard Home, I beg to disclaim every feeling of disrespect to his acknowledged talents, as well as every possible charge of setting-up my unsupported opinion in contradiction to his. To many of the valuable works of that able surgeon our profession is much indebted ; but the one in question does seem to me to be calculated to mislead the young practitioner : and I have had numerous opportunities of observing that the method of treating affections of the urethra according to his recommendation, is such as, in the majority of cases, will lead to the most distressing results.

The second part of this work, contains

Cases, and Observations on Strangulated Hernia: a subject of the greatest practical interest and importance, and one that cannot be too frequently investigated. It has been my fortune, in the course of a few years, to attend more cases of Strangulated Hernia and to be called upon to perform more operations, than commonly fall to the lot of a country practitioner unconnected with any large public institution. I have carefully noted the peculiarites and treatment of each case; and some of them, which are now presented to the attention of the reader, will be found not only interesting, but valuable also, as involving points of considerable practical importance.

My plan has been, first, to give a faithful detail of the particulars relating to each separate case; and then to offer such observations as appeared to be useful and necessary.

By a reference to the *Table of Contents*, it will be found that the remainder of the work consists of some Cases of uncommon Surgical Affections. It was my

intention to add others to them, particularly on the subjects of Aneurism and Cancer, but finding that they would considerably increase the size of the book, and the expense of its publication, I have for the present deemed it more prudent to omit them. Should, however, this small volume meet with a favourable reception, I may at a future period be induced to offer some further practical observations.

As an excuse for the unfinished style in which these remarks are conveyed, I can only say, that it has been my occupation to arrange the following cases, and to subjoin my observations on each, in such few and uncertain hours as have been unemployed in the duties of an arduous and somewhat extensive practice. They are, therefore, presented to the public in the diffident hope, that in some particulars they may tend to the improvement of that science to which I am most devotedly attached.

WILLIAM JAMES CLEMENT.

*Shrewsbury,
May, 1832.*

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A

CRITICAL ENQUIRY

INTO THE

DIFFERENT OPINIONS RESPECTING

THE

STRUCTURE OF THE URETHRA,

&c. &c.

B

A CRITICAL ENQUIRY INTO THE DIFFERENT
OPINIONS RESPECTING THE STRUCTURE OF
THE URETHRA; BEING AN ATTEMPT TO RE-
FUTE THE DOCTRINES OF SIR EVERARD
HOME, BART: TO WHICH ARE ADDED SOME
PRACTICAL OBSERVATIONS ON THE PREVEN-
TION AND CURE OF STRICTURES.

IT may be admitted, for the sake of brevity, that only two general theories have prevailed, respecting the anatomical structure and physiology of the Urethra; or, at least, the numerous authors who have written on these subjects, may be divided into two classes: the one supporting, the other denying, the opinion of the muscularity of the canal.

Mr. Hunter's ideas of the formation and structure of the urethra, have given rise to most of the modern theories, (particularly of the English surgeons), relating to its physiology. It was the opinion of that celebrated anatomist, that the urethra is muscular; he says, "the substance of the urethra is muscular, and it is therefore capable of contracting its canal, so much so as to shut it up entirely. This makes it subject to diseases peculiar to

4 ON THE ANATOMICAL STRUCTURE OF

muscle in general; *which is indeed the only proof we have of its being muscular.*"

Mr. Hunter produced no anatomical facts to prove the muscularity of the urethra, and from his own words it is most evident that this was only an assumed idea; he considered it to be muscular merely because "it is subject to diseases peculiar to muscle in general." Great as my admiration and respect for Mr. Hunter may be, yet on the authority of his name, deservedly celebrated as it is, it cannot be right to receive as facts, what in reality are only assumptions, or implicitly rely on doctrines which are at variance with the accounts of the anatomical structure of the urethra, as derived from the best ancient and modern authors.

Since the time of Mr. Hunter much has been written on the urethra, and particularly by two surgeons, whose professional rank and celebrity entitle them to the greatest respect; the one, Sir Everard Home, who has followed in the same track with John Hunter, imbibed the same opinions, and advocated the same doctrines;—the other, Sir Charles Bell, who has entertained different views, and promulgated opposite principles.

The discrepancy of opinion held by these

two authors is remarkable; Sir E. Home strongly insisting on the muscularity of the urethra;—Sir C. Bell denying the existence of its muscular structure altogether.

In forming a proper and correct decision on contrary views of any subject, more especially on questions connected with anatomy and physiology, the opinions of the best authors should be consulted separately, and we should then endeavour to shew by the investigation, which opinion best accords with facts, and what doctrine is the most rationally deducible from faithful and minute anatomical descriptions.

To prove the muscularity of the urethra, we have the writings and authority of Mr. Hunter, Sir E. Home, Mr. Wilson, and many other authors who have copied their views on the subject.—On the other side, we have the authority of Sir Charles Bell, and several eminent British anatomists, together with that of the best ancient and foreign writers.

The first work on the urethra, deserving notice, that was published after the treatise by John Hunter, is that written by Sir E. Home, in 1795. He has since favoured the profession with the publication of two other volumes, the one in 1803, the other in 1821.

It is to be observed that Sir Everard inculcates the same mode of practice in affections of the urethra both in his earliest and more recent publications ; he always *believed* in the existence of muscular fibres in the canal ; though it is quite evident from his work of 1795 that at the time of its publication he had no proofs afforded by investigation of the anatomy of the part, to support him in that supposition.

In page 15, he says, “it may be *difficult* and perhaps *impossible* to prove this membrane to be muscular, either from its appearance or from examination of its structure.”

From this passage it would appear that his views of the anatomy and principles of practice as offered in his first work, were not derived from, or confirmed by, facts, but were grounded only upon the verbal authority of his predecessor, John Hunter.

In the philosophical transactions of the Royal Society Sir E. Home has published some “observations on the human urethra, shewing its internal structure,” and these remarks are copied into the work which he published in 1821. In this volume Sir Everard informs us, that by the assistance of Mr. Bauer, and his wonderful microscope, he

thinks he has proved beyond all question the muscularity of the urethra.

Page 26, he says, "the structure of the human urethra, as far as it could be examined by ordinary vision, assisted by glasses of small magnifying power, has been long known to all the anatomists of the present day; and twenty-five years ago I thought myself thoroughly acquainted with it; but I now find that I was wholly ignorant of the more minute parts of its conformation."

And again, "from Mr. Bauer's examinations we find that the human urethra is made up of two parts, an internal membrane, and *an external muscular covering.*"

Again at page 28, "the muscular covering by which the membrane is surrounded, or enclosed, is made up of fasciculi of very short fibres, which appear to be interwoven together, and to be connected by their origins and insertions with one another; they have all a longitudinal direction. A muscular structure of this description, as far as I know, is not met with in any part of the body. It is however to be observed, that there is no other instance in which fibres of such minuteness have been examined, and faithfully represented." "The fasciculi are united together by an *elastic substance of the consistence of mucus.*"

At page 29, “ this mechanism which forms the canal of the urethra, is very different from what it has hitherto been contemplated to be ; and therefore a knowledge of it enables us to correct many errors that we had fallen into, with respect to the actions of its parts, both in a healthy state, and when under the influence of disease. Till now it was *believed* that either the lining of the urethra was composed of circular fibres possessed of a power of contraction, or that it was immediately surrounded by such fibres.”

It may perhaps have been the belief of Sir E. Home, that the lining of the urethra was composed of circular fibres; but after a patient and diligent research of the best authorities, I have not been able to discover that such was the opinion of many other writers of celebrity, with the exception of Mr. Hunter, and it has been shewn that even that accurate investigator of the structure of the human body, was not able to discover any muscular fibres, although he believed in their existence. It is certainly true, that Camper and Le Cat have described muscular fibres in the membrane. One of these authors states that the fibres run in a circular direction, the other affirms that they have a longitudinal course.

This difference of opinion between two

writers, both believing in the muscularity of the canal, at least proves the muscular fibres to be so exceedingly minute that it is difficult to determine how they are arranged, and in what direction they take their course.

At page 39, Sir Everard says, “the account which has just been given of the *real* structure of the urethra, obliges me to confess that all the theories that have been formed, whether respecting its healthy actions, or those in consequence of disease, are *entirely without foundation.*” And yet, in speaking of his former publications, he says, “as I have nothing to retract, I can have no wish to withdraw any thing I have advanced.”

This passage would lead to the supposition that although the author in question acknowledged himself to be ignorant of the real structure of the urethra at the time he first published, still the doctrines enforced in his earlier works were not erroneous; and his principles of practice were equally correct, whether the muscular fibres of the canal ran in a circular, or in a longitudinal, direction.

Page 44, “when we consider the natural delicacy of the internal membrane of the urethra *now first* made known to us, &c. &c.”

From the preceding quotations the reader

may perceive that Sir E. Home, while he assumes to himself great credit for his investigations and supposed discoveries in the structure of the membrane of the urethra, at the same time rejects all the opinions of other authors, as ignorant and unfounded. It must however be admitted, by every one who has considered the subject, that the delicate structure of the membrane of the urethra had been examined and described by authors long before any of Sir E. Home's publications appeared: how far their opinions are worthy of being placed in competition with those of Sir Everard's, a comparison alone can fairly decide.

The following quotation* deserves the greatest attention, because it involves a point of material practical importance: "That there is a marked difference between the appearance of stricture usually met with in the *membranous* part of the urethra, and others in the anterior part, is known to every practical surgeon, but it is only *now* that this difference can be completely explained."

In all the urethras I have dissected, and in all the preparations I have examined, in the splendid Museum at the College of Surgeons,

* Vide Home on Strictures, Vol. iii, Page 43.

and in the very extensive collection belonging to Sir Charles Bell, there is not one that exhibits a stricture situated in what is termed the *membranous* part of the urethra; and authors rarely mention the existence of it in that part of the canal.

Sir Everard says “the stricture formed in the membranous part, is, by the *means of a muscle*, brought round not only the tube of the urethra, but round the whole substance of the membranous portion; and when this has become permanent, the condensation and partial absorption of all these compressed parts, as well as of the contracted muscle itself, form a ligamentous substance so hard *that the stroke of a probe across it may be heard.*”

The authority of Sir E. Home on most subjects is certainly great; but the foregoing paragraph is really curious, and, to me, inexplicable. I am particularly surprised at his attempt to account for the formation of stricture in a part of the urethra where the existence of stricture has been denied, not only by the best practical writers on the subject, but contradicted also by the preparations in the College Museum.

I shall not trouble the reader with many more quotations from Sir E. Home’s works:

—the preceding are sufficient to shew his opinions, and lead us to suppose that he considers himself entitled to great credit for what he terms a discovery of the minute structure of the urethra. It would be unjust not to allow him every praise for the great attention which he has undoubtedly given to the subject; but how far his opinions are correct, and whether he is entitled to the honour of the discovery, will be hereafter seen. The medical profession will have to decide, whether the testimony of *one* author, however great his reputation may be, is sufficient to outweigh an accumulated mass of anatomical evidence.

Perhaps it may be urged that the opinions of ancient authors are inadmissible in a question relating to the correctness of a more recent discovery; and that in consequence of the advanced state of the science of anatomy, the observations and descriptions of early writers cannot carry with them much weight. The opinions and quotations however which I propose to offer to the attention of the reader, are from the best authorities;—from writers to whom we are indebted for a large share of that anatomical knowledge we now possess;—who have investigated the minute structure of the various parts of the

human body with the greatest accuracy, and whose opinions, consequently, must be regarded in the consideration of all points connected with anatomy.

No author who has written on this subject prior to Mr. J. Hunter, describes, or believes in, the existence of muscular fibres in the membrane of the urethra, or attributes the diseases, and deviations from the natural structure, to a deranged state of such a muscular apparatus. The authority of other writers may however be questioned, when put in competition with the opinions of Mr. Hunter and Sir E. Home ; but it must be admitted, that if such a structure exists, as described by the latter, it is rather surprising that the minute anatomists, whose works I shall quote, should have been totally ignorant of a subject upon which they paid more than common attention.

Some may argue, that it is to the wonderfully magnifying power of the microscope that we owe this remarkable discovery. I should be unwilling to discredit what Sir E. Home and Mr. Bauer have described ; but I cannot believe in the justness or accuracy of their opinions when they suppose *that* to be a muscular structure, which was presented to

their view even in a most unusually magnified state; for such fibres as “are united together by an elastic substance, of the consistence of mucus,” must be inconceivably minute.

This “elastic substance,” which unites the fasciculi together, I presume must have the same relation to those fibres where it is attached, as tendons have to muscles in general; but the idea of a tendon of not much thicker consistence than saliva would appear ridiculous; and whether such muscles, by their contraction, could cause so great a resistance to the introduction of a bougie, I shall leave for others to determine.

If it be true that the membrane of the urethra is of the delicate texture represented by Sir E. Home, and that its muscular fibres are connected and held together by an elastic substance, of no thicker consistence than mucus, might we not expect laceration, or some irreparable evil from every introduction of an instrument, although managed with the greatest caution and dexterity? I would ask every practical surgeon, what would become of these fibres (invisible certainly to the naked eye,) and their gelatinous connections, in the rude and unskilful attempts to pass a bougie or catheter into the bladder?

The opinion of the muscularity of the urethra, as described by Sir E. Home, might be doubted by the impossibility of reconciling the idea of such delicacy and minuteness of its fibres and their mucous attachments. To disbelieve, however, is not to refute; and before any great authority can be contradicted, it is necessary to bring forward the opposing testimony of others. In addition to the authors of the present day, I shall quote those who in their own time were respected, and even now must be considered of no mean authority.

DE GRAFF, in the year 1668, wrote a treatise on the *Organs of Generation* in the male, and has described very accurately their minute anatomical structure, but in no part of his work can be found any account of muscular fibres in the urethra; and as all his descriptions are acknowledged to be correct, and since little difference exists between the account of the individual parts given by him, and that of more modern authors, his testimony must certainly be considered of great value.

HALLER, who will always be accounted one of the greatest authorities in anatomy and physiology, denies the muscularity of the

urethra. In his *Elementa Physiologiae*,* treating of the coats of the urethra, we find this passage, “Eadem irritata a veneno chemica constringitur, ut tamen *non* sit musculosa.” If the existence of muscular fibres in the urethra was necessary for the act of passing urine, or emitting the semen, we might expect that so accurate an observer as Haller would have mentioned it; but at page 576, under the article of *Mictio Urinæ*, he says, “Expellitur autem, laxo semper pene, aut modicè certe arrigenti, *vi potissimum contractæ vesicæ*; hinc multo altiori et longiori saltu, quam semen, cum ex magno castello, per canalem perangustam exprimatur.”

Haller considers the urethra as only a passive instrument, both in the act of transmitting the urine, as well as ejecting the semen.

WALTHER also held the same opinion, as may be learned from his treatise published in the *Disputationes Anatomicæ* of Haller. The following passage is introduced as being confirmatory of his opinions on the subject.

“Neque vero urethram, loco, ubi sub vesicæ collo ea esse incepit, aliæ carneæ fibræ

* Vol. vii, Page 471.

attingunt, quæ, sut finem mictus, valideque eam possent constringere.”*

MORGAGNI has treated fully on the structure of the urethra, more particularly on the ducts which open upon its inner surface; but from his writings it does not appear that he supposed it to be muscular; and he attributes no action to the canal itself independant of the muscular apparatus of the bulb and perineum.†

LIETAUD says, “L’urethre est ce canal e’pais qui s’abouche d’un côté avec le col de la vessie, & s’ouvre par son autre extrémité à la pointe du gland. Ce canal dans son principe qui forme une continuité avec le col de la vessie est *membraneux*; mais après un pouce de chemin il devient spongieux; c’est-à-dire que les deux membranes qui semblent le composer, s’écartent pour loger un corps spongieux très-fin qui embrasse le canal.”

This author, whose descriptions are accurate, has not mentioned the muscularity of the urethra either as a supposition, or as a fact deducible from the anatomy.

MASCAGNI ‡ in his beautiful engravings of

* Vide Page 42.

† Vide *Adversar. Anatom.*

‡ Vide *Tav. vii.*

the minute anatomy of the urethra, has not noticed or depicted any muscular fibres, either in the membrane itself or below it. He particularly describes that part which Sir E. Home says is the situation of the longitudinal muscular fibres, to be a congeries of small vessels; and this indefatigable anatomist has also employed the microscope in his investigations; his testimony therefore, on this subject, must have greater weight.

PORTEL says,* "L'interieur de l'uretre est revetu d'une membrane en forme d'epiderme qu' on a classee parmi les muqueuses perces en plusieurs en droits de divers trous qui sont les orifices des glandes, ou des Lacunes qui l'on y remarque; elle forme les plis longitudinaux qu' on appercoit dans l'interieur de ce canal."

"Le canal de l'uretre d'une membrane composee de deux lames confondues dans les deux premieres portions et separees dans la reste par une quantite plus on moins grande d'un tissu spongieux."†

"L'excretion de l'urine est produite par la contraction du reseau musculeux de la vessie, le canal de l'uretre paroit alors dans un etat presque pessif."

* Cours d'Anatomie Medicale Tome v. p. 400.

† Page 461.

“L'excretion de la semence et de l'urine dans le canal de l'uretre peut étre troubler par toutes les causes qui peuvent le retrecir, le boucher et même par ulles qui peuvent affecter les muscles de son bulbe.”

CLOQUET, an able writer on this subject, says, “Dans toute son entendue l'urethre est tapissee interieurement par une membrane muqueuse laquelle est doublee dans ses deux premieres portions par une membrane celluleuse, et dans la derniere par une couche d'un tissu mou et spongieuse.”

MARGOLIN* gives nearly the same description of the structure and minute conformation of the urethra, as that quoted from M. Cloquet. It is quite evident that these two celebrated anatomists never imagined the urethra to be muscular; they most distinctly deny that the canal possesses any active power, either in transmitting the urine or ejecting the semen.

Sir CHARLES BELL speaks still more decidedly: he says, “I cannot imagine with some that the urethra is muscular; first, because I see no end it could serve in the œconomy; secondly, because there is no proof in support of the opinion; thirdly, because it is surrounded with strong fibres, and a spongy

* Vide Tome ii. Page 514.

body, which conjointly seem calculated for every purpose of the œconomy, and likely to account for every symptom which might be mistaken for spasmodic action in the canal itself. The idea of muscularity is derived from the symptoms of stricture, and the irritability of the canal.

“ The urethra is elastic: not only allowing a very large bougie to be passed, and closing upon a thread; but it still more remarkably admits of elongation, than of distention in the width of the canal. It is surrounded, as we have seen, with a spongy body and the cellular coat, which is betwixt the delicate lining membrane of the urethra, and the spongy body partakes of the structure of both, and is very elastic. But when an inflammation attacks the canal, this cellular membrane is its principal seat: the point affected loses its elasticity; no longer stretches with the penis and urethra, but consolidates, or forms a strong membranous filament. To suppose this stricture to have been formed by the muscular contraction in the diameter of the canal, would be to allow the partial action of one or two fibres: (for the stricture is like that which would be produced by the tying of a packthread round

the canal, being a narrow circular ridge:) which is very unlikely. Sometimes, however, the stricture is only on one side of the canal, which, allowing it to be formed by inflammation, is very likely to happen; but in consequence of the muscular action, cannot easily be supposed to take place, since the drawing of the muscular fibres would equally affect the whole circle."

From the preceding extracts we may form a conclusion as to the general opinion of some of the best authors on the subject now under discussion. There is one authority, however, which remains to be given: that of the late Mr. WILSON, who, in lectures delivered at the College of Surgeons, declared his belief in the existence of muscular fibres in the urethra: "I have repeatedly seen packets of longitudinal fibres connected to each other laterally in such manner, and putting on so marked an appearance that I could entertain no doubt of their being muscular, and for several years have shown the preparation I now produce in confirmation of their being so; for I know of no structure, but a muscular one, that would put on an appearance similar to what is seen in the urethra."

Mr. Wilson's testimony to Sir E. Home's

descriptions must necessarily enforce the probability of their accuracy. Mr. Wilson's opinions will always be valuable, as he was rarely seduced by fanciful hypothesis, and never advanced any proposition that he did not think deducible from the views of anatomy, and capable of being proved by them.

I differ from his opinions on this subject with the greatest diffidence; entertaining, as I always shall, the most unfeigned respect for his memory as my first anatomical teacher; but I am emboldened to dissent from him, when I know that the preparation which he exhibited as an example of muscular fibres, is confronted by another in the same museum, where the identical part is proved, beyond all doubt, to be a congeries of minute vessels.

When an author becomes wedded to a particular theory, he will adduce every fanciful argument in its favour, and in his eagerness to substantiate it, will catch at any thing however inconsistent; for it is to be observed that Mr. Wilson exhibited also a preparation of what he termed "a spasmotic stricture of the urethra." Is it possible, I would ask, for a spasm of any muscle to exist after death? How, therefore, can a preparation which has to undergo all the tedious process

of cleaning and maceration, shew a spasmodic contraction of a muscle?

Mr. Hunter was the first to give the name of Spasmodic Stricture, and he was followed by Sir E. Home, who accounts for the formation of stricture in the following language: “ This contraction and relaxation form the natural and healthy actions of the urethra; but as this membrane, like every other muscular structure, is liable to a spasmodic action, which produces a degree of contraction beyond the natural; and in that state the canal loses the power of relaxing until the spasm is removed. When this happens, it constitutes a disease, and is termed a spasmodic stricture. While a stricture is in this stage, it is only a wrong action of the membrane of the urethra; and if the parts should be examined in their relaxed state, *there would be no appearance of disease.* When a portion of the urethra is disposed to contract beyond its natural easy state, this disposition commonly increases, till the part becomes incapable of falling back into a state of complete relaxation, and the canal always remains narrow at that part. In this stage, it is both a permanent stricture and a spasmodic one. It is so far permanent, that it

is always narrower than the rest of the canal ; and so far spasmodic, that it is liable to contract occasionally in a still greater degree. A stricture in the urethra, whether in a spasmodic or permanent state, is a contraction of the transverse fibres of the membrane which forms that canal. When this *contraction* is in small degrees, it appears on *examination after death*, to be a simple narrowing of the canal at that part ; but when the contraction is increased, it becomes a ridge, projecting into the canal : this last is the appearance understood by a permanent stricture."

The reader will be aware of the contradiction contained in the foregoing paragraph : Sir Everard states, that when a stricture is in that stage which he terms spasmodic, "if the parts should be examined in their relaxed state, there would be no appearance of disease :" but in speaking of the contraction produced by this spasmodic action, he says, "when this contraction is in small degrees, it appears, on examination after death, to be a simple narrowing of the canal."

No one, I believe, will deny that the muscles cease to contract after death ; but perhaps Sir Everard Home has discovered that these fibres of the urethra possess a

peculiar tone, and that they continue to act, although every other part of the body may have become putrid.

A very obvious question must arise from the discussion of this subject; viz. of what use would a muscular structure in the urethra be for the act of passing urine, or emitting the semen? For the passing of the urine, it is necessary that a certain regular and uniform consent of parts should be established, whereby a relaxation of some muscles may be produced, in order that the contraction of others should have a due and proper effect. The urethra, in the act of passing urine, is in a passive state, the urine being propelled by the muscular coat of the bladder. If the urethra contracted, or assisted the expulsive force of the bladder, the urine could never flow, as it does flow in the healthy state of the canal, in a free and uninterrupted stream. The passage of urine through the canal of the urethra, if it were muscular and possessed an independent power of contraction, would, in all probability, resemble the flow of arterial blood, which we know escapes from an artery in jets or distinct pulsations. Are the same phenomena ever observed in the act of passing urine? Does it not flow in an equal

and uninterrupted stream, until the bladder is nearly emptied, when the remaining quantity is collected, and expelled by the action of the muscles at the bulb?

It will perhaps be contended, that the urethra requires a distinct set of fibres, for the purpose of combining its action with those muscles which produce that relaxation of the several parts so necessary for the easy and unobstructed passage of the urine.

To this we may answer, that the contraction of the bladder, and the force of a column of urine, would with facility overcome all such natural resistance as the elasticity of the canal could offer. But this mode of reasoning would, in reality, give a sphincter muscle to a part where no such structure could by any possibility be wanted. The bladder is provided with its own proper sphincter, and is quite adequate to those functions which it is destined to perform.

Sphincter muscles are only bestowed upon those organs which discharge certain contents, whether they be solid or fluid; and which, for the most part, are contained in, or secreted by, some hollow viscus, of which this peculiar structure is the termination, as the anus and pylorus. But the urethra has no proper

contents to discharge; it is no secreting surface, beyond what is necessary to defend its natural irritability against the acrimony of the urine. A fluid is certainly secreted in it to a trifling extent; but this is not excrementitious, and is therefore never discharged but when the canal is subject to a diseased action. Of what use, therefore, could a sphincter muscle be to such a structure?

I must now refer my reader to a paper published in the tenth volume of the Medico-Chirurgical Transactions, in which the anatomy of the urethra has been explained and investigated by my late lamented friend Mr. Shaw.

Mr. SHAW thought that he proved the opinion of the muscularity of the urethra to be not founded upon the facts of the anatomy of the part, and that it “has been attempted to be proved more by arguments from analogy, than by ocular demonstration; for it is urged that muscular action does exist, even though muscular fibres be not visible.”

Mr. S. also states, “I have not been able to discover any fibres in the membrane of the urethra of a man, of a horse, or of an ass.”

Speaking of the fibrous appearance in the

urethra, posterior to a stricture, he says, “ It resembles the fibres which are formed on the peritoneum or pleura, by inflammation, and in many cases fibres are quite detached from the membrane, except at their two extremities, being similar to the bands which are occasionally seen running across hernial sacs.”

If we examine a great number of slight strictures, very few examples of the urethra contracted into a regularly circular form will be found ; but in the greater number of cases, about one-half, or two-thirds, of a portion of the urethra will have become white and dense, or a firm white line will be seen running obliquely across the passage ; and yet we do not find any oblique fibres described in the natural state of the parts. We must account for the formation of stricture on other grounds than the contraction of muscular fibres, for we find by dissection, appearances which denote previous inflammation.

Is it not more reasonable to attribute the formation of stricture to inflammation, and the necessary condensation produced by it, than to a contraction of muscular fibres, which certainly are not to be distinguished ; this contraction being at first spasmoidic, but becoming eventually permanent ?

For the sake of argument, let us suppose, that strictures are produced by a partial contraction of muscular fibres, at first spasmodic, but at last becoming permanent. What can produce a permanent contraction in any muscle, but inflammation and consequent thickening and condensation? And why should we look for this inflammation as peculiar to muscle? Wherefore is a disease attributed to the wrong action of a certain structure, whose existence is doubted and contradicted by the best authorities, when the same morbid appearance can be much more satisfactorily explained in a different structure; as an equal degree of stricture and condensation are frequently found both in the pleura and in the peritoneum? Yet no one, I believe, will contend that these membranes are possessed of muscular fibres.

If the urethra were not subject to inflammation, and that commonly of a most active character;—if a mass of evidence could be adduced to prove that the majority of strictures, met with in practice, occurred in patients who never had any gonorrhœal affection, we then perhaps might rest satisfied with attributing the formation of strictures to a spasmodic contraction of certain muscu-

lar fibres; but since almost all cases of recent, as well as confirmed permanent strictures, are met with in those persons who have long and repeatedly laboured under attacks of gonorrhœa, it is more rational to attribute their formation to some inflammatory action. This opinion is strengthened by the fact, that the situation of stricture is most commonly observed at that part of the canal which is the seat of gonorrhœal inflammation.

Sir E. Home describes the existence of stricture in the membranous portion of the urethra, which is never affected by gonorrhœa; —at least it very seldom happens that the inflammation extends to that part of the canal; this, in my opinion, is the reason why stricture is seldom or never seen there; and Mr. Hunter's own authority on this subject can be adduced in opposition to Sir Everard Home.

Mr. Hunter has the following passage, in speaking of those parts of the urethra where strictures are most commonly situated: “Every part of the urethra is not equally subject to strictures, for there appears to be one part which is much more liable to them than the whole of the urethra besides, that is about the bulbous part. We find them, how-

ever, sometimes on *this* side of the bulb, but *very seldom beyond it.*"

I have always been taught to consider that portion of the urethra the membranous one which lies between the bulb and the prostate gland; and the preceding quotation from Mr. Hunter's work, on the venereal disease, is an admission, on his part, of the uncommon situation of a stricture *beyond* the bulbous portion of the urethra.

The muscularity of the urethra has been attempted to be proved by many ingenious speculations on the phenomena exhibited by certain morbid conditions of the canal, and by the changes which take place during the natural actions of this part. My friend, Mr. Shaw, endeavoured to refute the arguments derived from these speculations, by the performance of several experiments on the dead body, the results of which were extremely favourable to the opinion he entertained on the subject.

Mr. Shaw says, "The changes which are supposed to take place in the size of the canal during the natural actions, and the phenomena of disease, have been both adduced as arguments in favour of the muscularity of the urethra;—for example, the diminution of

the canal during the emission of semen is given as a proof of muscularity; but the same diminution may be produced after death, by injecting the spongy body."

This argument, if it can be called one, scarcely needs any refutation, because it must have been offered without a proper attention to the state of the parts during the emission of the semen. It must be obvious, that the turgid and enlarged condition of the vessels of the spongy body, occupy a much larger space than they do in the unexcited state of the penis;—the urethra being the only yielding or hollow part is consequently compressed, and this compression produces a corresponding degree of diminution in the calibre of the canal.

One powerful argument in favour of the muscularity of the urethra, has been refuted by Mr. Shaw, namely, the expulsion of an injection in a case of gonorrhœa. Mr. S. found, that by throwing a small quantity of water into the corpus spongiosum, so as to make the penis swell, and resemble the state generally met with in a case of gonorrhœa, and on injecting the urethra "*the fluid was thrown out nearly a yard.*" No one could say, that this expulsion was affected by

muscular contraction in a body almost putrid, and which had lain in the dissecting-room for many days; it must, therefore, be attributed to the natural elasticity of the parts, which is nearly as perfect after death as in the living body.

Mr. Shaw accounts for the expulsion of a bougie on other grounds than the muscularity of the urethra: "The expulsion of a bougie by the natural actions of the urethra has been given as another proof, but this may also be met by an experiment on the dead body. If we distend the spongy body slightly, and then introduce a bougie into the urethra, it will be gradually pushed out. We must recollect, that when a bougie is passed in the living body, the penis is pulled up upon it. When we let the parts go, the penis recedes from the bougie, the muscles of the perineum push it out to a certain extent, and there remains so small a portion, that we can readily conceive the elasticity of the parts to be sufficient to press out the remainder of this conical instrument."

Much importance has been attached to the difficulty and resistance that sometimes occur in the introduction of a catheter or bougie; and this has been adduced as evidence quite

conclusive of the muscularity of the urethra ; but in the ample experience which I have had of passing these instruments, I have met with no other resistance than what might have been expected from the natural formation of the canal, (excepting in cases of permanent stricture,) until the point of the instrument had proceeded so far downwards, that a spasm or irregular action of the muscles, situated near the bulb, caused some temporary obstruction. This however is an action quite independent of the urethra itself ; and if the fingers be placed on the perineum, the muscles there will be found to contract in a most forcible manner, producing a corresponding action in the sphincter ani.

The diminished flow of urine during an attack of gonorrhœa is easily explained. Some have contended that the stream of urine is made smaller than usual, by the action of these invisible muscular fibres of the urethra ; but I think a much more satisfactory explanation is this, that “ the calibre of the canal is to a certain extent diminished by the swollen state of the parts ;” but what is of much more consequence, the muscles of the perineum, and the *detrusor urinæ* are very irregular in their actions, on account of

the increased sensibility of the membrane of the urethra to the stimulus of the acrid urine.

If the reader will take the trouble to consult the paper to which I have alluded, written by Mr. Shaw, he will find that the opinions of that anatomist are not founded merely on speculative grounds, for he has, in my opinion, proved his assertions in a manner the most convincing, by a reference to the minute anatomical structure of the part. Mr. Shaw goes so far as to disprove the existence of muscular fibres in the urethra, by the discovery of an internal spongy body: he says, "I am able to shew, that what has been described as muscular fibres immediately under the mucous membrane, is the uninjected vascular texture of the internal spongy body." For a more detailed account of this structure, I refer my reader to the original paper by Mr. Shaw; but must beg permission to add my own humble testimony and belief to the correctness of the account which he has given. Many opportunities occurred to me of carefully examining an injected preparation soon after it was made, and no doubt exists in my mind, that what Sir E. Home has described as muscular fibres, is the tissue of

minute vessels forming the internal spongy body.

To some the preceding arguments, supported by anatomical facts, may appear conclusive ; to others who have imbibed what I venture to call a stubborn prejudice, in favour of the doctrine of the muscularity of the urethra, they may appear of little or no weight. Let them, however, unbiassed examine the different arguments and experiments brought forward to support either side of the question : (for it is only by a diligent and impartial comparison of the different views which have been offered on the subject, that an opinion is justifiable :) let the facts of the anatomy and the physiology be taken together, let the different curious phenomena exhibited during disease be also accurately observed ; and I affirm, that he who thus unprejudiced weighs the matter, will come to reject the opinion of the muscular structure of the urethra ; first, because the existence of muscular fibres in that canal is not necessary for the actions which it performs ; and secondly, because such fibres are denied by a majority of eminent authorities.

I must therefore contend, that allowing (which for my own part from conviction I

deny) such fibres to exist, as described by Sir E. Home, their structure is so inconceivably minute that whatever degree of spasm takes place in the urethra, cannot be attributed to their action, and that the impediments to the introduction of an instrument must depend upon other causes.

The subject is not to be considered merely debatable, affording grounds only for theory and speculation, and of no great practical importance; because surgeons should not tacitly acquiesce in the opinion of the muscularity of the urethra, or should deny the existence of its muscular structure, as if it were a matter of no consequence in the regulation of their practice and the treatment of those diseases incidental to the canal. The surgeon who attributes the primary cause of stricture to muscular contraction, will of course, rationally enough, proceed in his attempts to prevent that stricture "which is at first spasmodic," from eventually becoming permanent. This he endeavours to accomplish by the introduction of bougies, for the purpose of stretching these muscular fibres, and by the power of dilation he hopes to check the spasmodic stricture, that it does not become permanently contracted.

From the careful attention which I have given to this subject, I have confidence enough to affirm that the majority of strictures met with in practice, are produced in the first instance by improper and officious interference on the part of the surgeon:— by the introduction of bougies at a time when the urethra is not only in a state of extreme irritability, but when a degree of chronic inflammation exists in some part of the canal, the consequence of an imperfectly cured gonorrhœa.

The fears of patients are frequently excited, by the stream of urine appearing smaller than usual after their recovery from the acute symptoms of gonorrhœa; and they actually may experience some difficulty in voiding it; this they of course attribute to the formation of a stricture, whereas it more frequently depends upon the want of elasticity in the canal, produced by the previous inflammation; and some degree of thickening may probably exist as the consequence of it, but which will gradually subside, if the canal be not interfered with, or irritated, by the passing of instruments.

So convinced am I of the impropriety of, and the bad effects which arise from, the

use of bougies, in what are supposed to be cases of recently formed strictures, that whenever I am consulted by patients who have some difficulty in making water, and express their fear of the formation of a stricture, I invariably object to the introduction of the bougie, if, upon enquiry, I find that they have only recently recovered from gonorrhœa. My practice, in such cases, is to direct a small quantity of the Linim. Hydr. Camphor to be rubbed along the line of the urethra every night and morning; and it has always happened that those patients, who have had confidence to pursue this plan and give it a fair trial, have returned to me in the course of a short period, declaring themselves perfectly free from any obstruction, or difficulty in making water.

When obliged, for the satisfaction of my patient, to sound the urethra, in order to discover the situation of a supposed stricture, I have frequently observed, that after the bougie was passed three or four inches from the orifice, its point touching and pressing a particular spot, the patient has shrunk back, and expressed a feeling of pain. By a gentle pressure, however, the bougie may be passed onwards, and it afterwards proceeds

with facility towards the neck of the bladder, without producing any unusual pain. On withdrawing the instrument, and pressing with the finger upon the urethra externally, at the part where the bougie produced the pain when in the passage, I have always found that the patient complained of soreness and a sensation different from what was caused by pressure upon any other part on the whole line of the canal.

This is what some surgeons would term an incipient spasmodic stricture, requiring the daily use of the bougie to overcome its tendency to permanent contraction; but I have considered it as a remnant of the gonorrhœal inflammation, that this particular part of the membrane of the urethra continues inflamed, is consequently irritable, and requires a plan of treatment directly contrary to that which might be proper in a case of spasmodic stricture, supposing such an affection of the urethra to exist.

In such cases, I direct the application of leeches as near as possible to the part affected, and a repetition of them at least once a week for a month, or sometimes longer, according to circumstances, prescribing at the same time full doses of the Liquor

Potassæ, for the purpose of modifying the acrimony of the urine, and rendering it less stimulating to the inflamed surface over which it passes. When I find that the tenderness of the part has been removed by the local bleedings, and the patient no longer complains of soreness, or of a dull indistinct pain on pressure, I advise the application of the Linim. Hydr. Camph. When this course of treatment has been diligently followed for some time, I have had the satisfaction of passing a full sized bougie into the bladder, not only with the greatest facility, but also without causing the patient to suffer any unusual pain.

If I had adopted a different mode of treatment, in the numerous cases which have come under my observation, I conscientiously believe that the result of my practice would not have been so beneficial to my patients, nor so satisfactory to my own feelings;—because it is most rational to infer, that the daily or frequent passing of a bougie along a canal lined by a membrane naturally irritable, and which, at particular parts, is affected with a chronic inflammation, must have the effect of increasing or keeping up that inflammation which eventually produces condensation and

thickening ; or in other words,—a permanent stricture.

I have not employed the caustic bougie so often, as to warrant me in offering any decided opinion with regard to its efficacy ; but from the trials made of it, I have observed great benefit apparently derived from one or two slight applications to that part of the membrane of the urethra, supposed to be the seat of chronic inflammation. I have used it, however, not with any idea of or reference to its action as an escharotic, to destroy and afterwards enlarge the diameter of the contracted canal, but from the well known properties which the Argentum Nitratum possesses of allaying or destroying the irritability of inflamed surfaces.

The fact that certain portions of the membrane of the urethra continue in a state of chronic inflammation after the total suppression of a gonorrhœa, has hitherto been but little attended to, if not entirely overlooked ; but from repeated observation, and the numerous cases which have presented themselves to my notice, I am convinced that it is of very frequent occurrence, particularly in persons of a scrophulous constitution.

This opinion is not founded merely on spe-

culative grounds, for in three instances I have had an opportunity of dissecting the urethra, the patients having been carried off by acute diseases shortly after their recovering from attacks of gonorrhœa. In each of these cases the membrane of the urethra presented nothing unusual in appearance, excepting at one spot, about three inches from the orifice, which looked much redder than any other part of the canal, felt firmer under the finger, and upon a minute inspection, a congeries of small vessels were seen ramifying on the surface, evidently denoting an increase of vascularity.

The examination of these cases first led me to suppose that this local inflammation, if not subdued, might most frequently be the cause of the formation of strictures in the canal ; and acting upon this supposition, I have since directed such a plan of treatment as appeared to me most rational for the cure of all cases of incipient strictures, where any tenderness on pressing the urethra was present. Instead of irritating the canal by the introduction of instruments, I have advised in the manner already stated, the application of leeches, and afterwards friction with the mercurial liniment.

I do not, however, wish it to be supposed

that I believe this mode of practice would cure or even relieve patients who are labouring under confirmed permanent strictures ; in such cases we must trust to some mechanical means either to destroy, or effect a dilatation of the constricted parts.

These observations, however, are offered to the consideration of my professional brethren, in the hope that they may lead to a greater discrimination in the use of bougies ;—to point out to them, that the experience acquired by a tolerably extensive practice in the treatment of affections of the urinary organs, proves that many cases of what are improperly termed strictures of the urethra may be cured without the use of these instruments ;—and to direct their attention more particularly to that chronic inflammation of the canal, which, if timely noticed, is easily subdued ; but if neglected, will cause such a thickening and condensation of the parts as must eventually produce those distressing symptoms consequent upon any impediment to the free evacuation of the urine.

ON HERNIA.

CASE OF STRANGULATED INGUINAL HERNIA
IN THE FEMALE.—SECONDARY PROTRUSION
AND SLOUGHING OF THE OMENTUM.—RECO-
VERY OF THE PATIENT.

Mrs. Bailey, aged 49, has had a rupture for many years, but which was reducible by the slightest pressure, and only once previous to the present time, (November, 1823,) had any symptoms of strangulation occurred. The Hernia, although strangulated at that time for a few hours, was ultimately reduced; and to prevent a recurrence of any unpleasant consequences, the patient was desired to wear a truss: this advice, however, was disregarded, and her attention was not directed to the tumour, nor had she suffered any inconvenience from it until the night of the 5th of November, when she was seized with violent pain in the bowels, accompanied by a disposition to vomit. A medical gentleman, living in the patient's neighbourhood, was called in, and having no knowledge that she was subject to a hernia, did not consider the complaint of an alarming nature: he prescribed some

simple carminative draught, and left her about eleven o'clock at night.

She passed a very restless night ; suffered great pain in her bowels, made frequent but ineffectual efforts to discharge their contents, and vomited repeatedly. Early in the morning, my partner, Mr. Griffith, was requested to visit the patient, and found her labouring under the most marked symptoms of strangulated hernia. He immediately bled her largely from the arm, and attempted a reduction of the tumour ; but failed after persevering for a considerable time.

At one o'clock I was desired to accompany Mr. Griffith. We found all the symptoms aggravated : there was violent pain, and incessant vomiting of a dark coffee-coloured fluid.

A warm bath was procured as quickly as possible, in which the patient was placed, and venæsection again employed until fainting was produced. I then attempted to reduce the hernia, and persisted in my efforts upwards of an hour, but failed in making the least diminution in the size of the protruded parts.

I now felt convinced that an operation afforded the only hope of safety to the

patient, but unfortunately her husband was from home, and not expected to return before evening; and she would not submit to it without his concurrence.

In the mean time, we prescribed a draught to be taken in a state of effervescence, with a view to relieve, if possible, the vomiting, which had become very constant and distressing: the irritability, however, of the stomach was so great, that the medicine was immediately rejected.

At seven o'clock in the evening I again visited the patient. The urgency of the symptoms admitted of no longer delay, and Mr. Bailey having returned home, the operation was again proposed to the patient, to which, without any hesitation, she now consented, and declared that, judging from her present feelings, she could not, unless relieved, survive many hours.

OPERATION.

The tumour was about the size of a goose's egg, very tense and exceedingly tender. Its situation was about midway between the anterior superior spinous process of the Ilium, and the Pubes. I made an incision obliquely across the surface of the tumour, commencing about an inch above its upper part, and

afterwards proceeded to raise the successive layers of fasciæ, until the peritoneal sac was distinctly exposed. This was opened at the most depending part, and a small quantity of serum escaped. When the sac was opened to its fullest extent, a considerable portion of omentum protruded, and below this, three or four inches of small intestine was found firmly strictured, and of an exceedingly livid colour. The stricture was formed by the neck of the sac, which I divided in a direction upwards and outwards, that is, inclining towards the anterior superior spinous process of the Ilium.

After the division of the stricture, and the replacement of the intestine, the sickness ceased, which for many hours previous to the operation, and even during its performance, had been almost incessant.

The wound was closed with sutures and adhesive plaster; a compress was applied, and retained in its proper situation by the application of a T bandage. In the course of half an hour after the operation, the bowels were twice opened; and I left the patient very comfortable at twelve o'clock.

7th November, 9 o'clock, ante mer. The patient slept well during the night. Pulse

96. No thirst; feels occasionally a disposition to vomit. Bowels rather uneasy and disturbed by flatulence; no tenderness on pressing the abdomen. She is ordered to take a saline draught in a state of effervescence.

1 o'clock, noon. Symptoms the same as in the morning; the bowels have not been opened since last night.

10 o'clock post mer. She is now very uneasy, having made no water since the morning.

I introduced the catheter, and more than a pint of high-coloured urine was drawn off. After this the bowels acted very freely. She feels no pain from the wound, and expresses so much relief since the urine has been evacuated, that she hopes to pass a good night.

8th November, 9 o'clock, ante. mer. She slept well during five hours of the night, but feels restless and rather thirsty this morning. Complains of pain shooting occasionally through her loins and bowels. Has made no water since the catheter was used on the preceding night, but the bladder does not feel distended; neither does she complain when pressure is applied to the abdomen. Pulse 90. Tongue rather furred. She is

ordered to take half an ounce of Castor oil, and to continue the Saline draughts.

1 o'clock noon. Has passed no urine: the catheter was again used, and the water drawn off, still high coloured.

10 o'clock post mer. There is no variation in the symptoms. Bowels have not been opened, but she feels no pain in them, and is inclined to sleep: she has had no sickness during the day.

9th of November, 9 o'clock ante mer. She slept well through the first part of the night, but has been much disturbed by griping pains this morning; there is, however, not the least tenderness of the abdomen. Before removing the dressings, I ordered an enema to be administered, which acted copiously, and the evacuation was very healthy. The wound is nearly healed; there is no tumefaction or tenderness, but a slight oozing from the upper part of the incision. I did not remove the sutures. Dressed with straps, compress, and bandage.

9 o'clock post mer. She feels perfectly easy, the bowels have acted once since the morning. Pulse 80. Tongue clean. In every respect the symptoms are most favourable.

Having on the following morning met with

an accident which confined me to the house for some days, I was unable to attend to this case. In the mean time my partner dressed the wound, and reported to me the favourable condition of the patient.

The incision was to all appearance perfectly closed in a few days; but, in consequence of straining to evacuate the bowels, on the morning of the 13th the wound opened and a considerable portion of omentum was protruded. Some time elapsed before my partner could visit the patient, when he found it impossible to return the protruded omentum, which in size was as large as a billiard ball. The part became strangulated, and afterwards sloughing commenced, which gradually proceeded until the 23rd, when I was again able to visit the patient.

23rd of November. There is still a small portion of omentum to separate; it hangs out of the wound, and in appearance is very like a piece of chewed brown paper. During the whole process of sloughing, up to the present time, the patient experienced not one unpleasant symptom, with the exception of retention of urine. She had no vomiting, nor pain in the bowels, and there was no occasion to give purgative medicines.

December 2nd. The wound is perfectly well, and the patient is able to resume her ordinary avocations.

REMARKS.

I consider this altogether a most interesting case, and its favourable termination could not fail to be gratifying to me.

When the intestine was exposed, I had great apprehensions for the patient's safety, because, from the very livid colour which it presented, I was fearful that the operation had been too long delayed. My readers will perhaps be surprised, that the Tobacco Enema was not administered before the operation was performed. I did not employ it, in consequence of the strong (and, as some surgeons may consider, unfounded) prejudice which I have against that remedy. Many of my professional brethren will be surprised to hear me state, that *I* have never known an *operation succeed*, after the tobacco enema *had been given*. My opinion has been formed from not a very limited number of cases; for, besides those which have occurred in my own private practice, I had many opportunities of witnessing operations for hernia in London and Edinburgh, and have uniformly noticed that those ended fatally

which had been preceded by the exhibition of tobacco clisters. This observation may not accord with the practice and testimony of other surgeons: I make it as the result *only of my own* experience.

I attribute the ill success which too commonly attends operations for strangulated hernia, to the great delay before performing them; thereby bringing a good and perfect operation into disrepute, whereas there is nothing faulty in the operation itself, when properly and carefully performed. One of my principal objections to the tobacco enema is, that it serves as an excuse for the repetition of the use of the taxis, and a perseverance in it, under circumstances which no longer admit of it, and when more decisive measures should be adopted. In two cases I have seen fatal effects decidedly produced by the tobacco, the patients having expired in the state of collapse and exhaustion occasioned by its use: and in another instance it had nearly caused death when administered to a very valuable professional friend.

I am inclined to think, that syncope when produced by bleeding, and the warm bath is quite as efficacious as that following the

administration of a tobacco enema: and if a careful and diligent perseverance in the use of the *taxis* fail to reduce a rupture when fainting has been produced by the *former*, we may almost despair of success by resorting to the *latter* means.

Let us for a moment enquire into the condition of a patient who is to submit to the use of the tobacco enema. Every surgeon, even the warmest advocate for the remedy, must acknowledge it to be a dangerous one, and that it ought never to be employed but as a last resource—a kind of forlorn hope.—No one, then, can be justified in administering it, until all other known means have been tried: the *taxis* is allowed to be the only effectual one. We will suppose the *taxis* to have been long and perhaps forcibly used; even if the tumour be handled with great gentleness, some soreness and pain must inevitably be produced; and pain and soreness cannot exist long without being accompanied or followed by inflammation.

We will suppose the surgeon foiled in his attempts at reduction, and at length obliged by the entreaties of the patient to grant a brief respite: his duty, however, compels him to persevere, and after a short interval,

the attempts are repeated:—The parts become more tender, the pain is increased, and pressure becomes intolerable,—the surgeon thinks he must still persevere, and consequently makes many more equally ineffectual endeavours at reducing the tumour, all of which are attended by an aggravation of pain and suffering. These repeated trials of the taxis proving abortive, he determines upon using the tobacco enema:—it is administered, and produces the usual effects. The taxis is again resorted to, sometimes I must admit with a favourable result, but according to my experience it more frequently fails, although the greatest exhaustion may have been produced by its administration.

When the stricture is formed by the *rigid neck of the sac*, which I believe to be its most common situation in almost every species of hernia, what advantage can we expect to derive from producing temporary exhaustion and great prostration of strength? The neck of the sac is generally of a tendinous compactness, and is a part almost incapable of yielding in any degree.

However great may be the relaxation of *muscular* power caused by the use of the tobacco enema, it cannot affect a part which

in itself is passive ; and when the stricture is formed by the sharp edge of the neck of the sac, we may expect to derive as much benefit from venæsection and the warm bath, as from the tobacco injection.

But supposing the tobacco to have been administered, and the taxis to have been used afterwards *without* success ; what is the condition of the patient ?—An hour, or perhaps a longer space of time, has been suffered to elapse, and no decisive measures have been adopted, when in his critical situation the delay of a minute is dangerous : —and what is still worse, the cessation of pain, which commonly results from the administration of the tobacco enema, lulls the patient into a feeling of temporary security, and the ease which for a short time he enjoys renders him very unwilling to submit to any thing so painful and desperate in anticipation as the operation.

After the taxis has been tried by two, three, and (when a consultation is required) by more persons, is it illogical or unreasonable to infer that these repeated attempts lay the foundation for such mischief as no after-treatment, however skilful, can remove ?

The operation is at last proposed, and may

be most scientifically performed ;—but, during the time of previous unnecessary delay, inflammation has commenced, which at first may proceed in an insidious manner, but in the course of twenty-four or thirty-six hours, and frequently according to my observation at a much earlier period, it shews itself by more decided symptoms.

The inflammation consequent upon an operation for hernia, whether it be Peritonitis or Enteritis, has been too frequently ascribed to a wrong cause, namely, to the *operation itself*. It would be absurd to deny that an incision of the investing membrane of the abdomen, (for such the peritoneum is, and forms the sac of the hernia,) will be unattended with danger. The stricture, as I have before observed, being most frequently at the neck of the sac, requires division, and consequently there must be an incision in the peritoneum: such a breach of this membrane will occasionally be *followed* by inflammation extending over the whole of its surface; yet, I must contend, that in a considerable majority of cases, the inflammation which is supposed to arise from the operation itself, *commenced prior* to its performance, and the cause which produced it may most reasonably

be attributed to *delay*, and *the long-continued use of the taxis*.

The practice of giving strong cathartic medicines either before or after the performance of an operation for hernia, is, in my opinion, very injudicious:—before the operation, when the intestine is firmly strangulated, aperients can be of no service; but on the contrary they must necessarily increase the pain and vomiting:—after an operation, all irritation should be studiously avoided: and I consider it a much superior manner of treatment to solicit the action of the intestines by the administration of enemas, than to act violently upon them by the exhibition of strong and drastic cathartics. Should aperients really be necessary, the mildest only ought to be employed.

From the perusal of this case, the reader will learn the necessity of applying a constant pressure upon the groin, even after the wound is to outward appearance perfectly healed; and, what is still more important, it proves that sloughing of the omentum may proceed to a considerable extent, without producing any serious effects. The omentum must have been firmly strictured before the circulation through it could have been so far impeded

as to produce death of the part; but this strangulation, and consequent mortification, never caused any general disturbance of the system; there was no sympathetic affection of the stomach, and, with the exception of the bladder, all the viscera performed their functions regularly, and the secretions were healthy.

CASE OF STRANGULATED INGUINAL HERNIA
IN THE FEMALE.

December, 1823.

Mrs. B. aged 76, had an Inguinal Hernia on the right side for many years, but never wore a truss. She repeatedly suffered from severe attacks of Bronchitis, and about a fortnight since laboured under the common symptoms attending Pneumonia, for which she was bled and treated in the usual manner. Although the acute inflammatory symptoms were abated, the disease left a troublesome cough, which continued to the present time. Throughout her illness the bowels had been obstinately constipated, although she had taken freely of aperient medicines.

On the 31st of December, during a violent fit of coughing she felt the hernia enlarge beyond its usual size, and attended with great pain. My partner was sent for in the night, and endeavoured to reduce the rupture, but without success. The symptoms at this time became very urgent; the patient complained of excessive pain in the bowels, accompanied by frequent efforts to vomit. My

attendance was desired early in the morning, and I persevered in the use of the taxis for some time without effecting any reduction in the size of the hernia. As the pulse was full and quick, and the cough still troublesome, ten ounces of blood were abstracted, which, when cool, appeared to be slightly inflamed. The warm bath was afterwards used, and the taxis again resorted to, without any good result. The vomiting now became more constant, and the matter ejected was of a feculent nature. The stercoraceous vomiting occurring so soon after the first symptoms of strangulation had appeared, convinced me that no further delay was admissible, and that the only means of saving the patient's life would be afforded by an operation. At twelve o'clock another surgeon was called in to a consultation, and attempts were again made to reduce the rupture.

I must here observe that a very deceptive symptom induced this gentleman to continue his attempts at the taxis for a longer period than otherwise he would have considered necessary. I allude to the gurgling sensation produced by effusion of serum in the sac, which caused a feeling and crepitus not unlike that which is perceived when the

intestine itself returns within the cavity of the abdomen.

The Tobacco Enema was recommended, but it did not produce such distressing symptoms as generally follow its administration. The taxis was again resorted to, and persevered in for some time; no impression, however, was made on the tumour. The operation was at length proposed, and most cheerfully agreed to.

I performed the *Operation* at two o'clock in the afternoon of the first of January. The size of the rupture was much the same as the preceding case, but not so prominent. I found it rather a difficult piece of dissection to expose fairly the *peritoneal sac*, in consequence of the firm adhesion between the superficial inguinal glands and the different layers of fasciæ which cover it. But I was not annoyed by the bleeding of any of the smaller vessels, which sometimes proves so troublesome in this stage of the operation. When the sac was opened, more than an ounce of serum escaped; there was a portion of very dark-coloured omentum over the intestine, which, although firmly strangulated, was not of so livid a colour as that in the preceding case. I experienced consi-

derable difficulty in dividing the stricture, and it was a work of some nicety to introduce the finest director and bistoury within the neck of the sac, which in this case also was the seat of strangulation. As the stricture was so high up, I did not think it prudent to make one long incision, but made several small nicks in different directions, which are as effectual in relaxing a circle as a single deep incision. After the stricture had been divided, the intestine was easily reduced. The patient bore the operation (which was completed in a short time) with great fortitude, and in the course of half an hour afterwards expressed herself much relieved by it.

7 o'clock post mer. The patient is greatly troubled by her cough, and she does not expectorate. The bowels have acted once very freely since the operation, and the pain and vomiting have entirely ceased. There is no tenderness on pressing the abdomen. Pulse 100, full and strong. I abstracted eight ounces of blood from the arm, and prescribed a saline expectorating mixture to be taken every two or three hours.

3 o'clock ante merid. She has slept very comfortably from eleven o'clock to the pre-

sent time, but is now much disturbed by her cough and difficulty of breathing. Pulse 120, but not so full as prior to the bleeding. There is not the slightest tenderness on pressing the abdomen. She has made no water since the operation. I used the catheter, and half a pint of high-coloured urine was drawn off.

Jan. 2nd, 10 o'clock ante mer. Since I left the patient at three o'clock this morning, the bowels have been twice opened; the evacuations rather dark coloured. I was obliged to use the catheter again, and found the urine very high coloured. As the cough and difficulty of breathing continued, I abstracted eight ounces of blood, which was much inflamed and cupped. A blister was applied to the chest, and the mixture ordered to be continued.

3 o'clock post merid. Her breathing not so laborious, and the cough less troublesome. The bowels have acted three times since ten o'clock this morning; the evacuations not so dark coloured. I visited my patient again at seven o'clock in the evening, and found the cough and difficulty of breathing returned in an aggravated degree. The pulse was 110, full and strong. Notwithstanding the

age of the patient, I determined upon taking away some more blood, which, upon cooling, evinced the most unequivocal signs of inflammation.

10 o'clock post merid. The loss of blood appears to have greatly relieved both the cough and difficulty of breathing, although the former is still troublesome, and she expectorates with difficulty. She is perfectly free from pain or tension of the abdomen. She has taken mutton and chicken broth in considerable quantities during the day. The expectorating mixture is to be continued.

Jan. 3rd, 4 o'clock ante mer. At this time the nurse came into my room, and desired my immeditate attendance. I found that a remarkable change had rather suddenly taken place, for the difficulty of breathing was much increased; the countenance anxious, the pulse very rapid and indistinct. Cordials were freely administered, but the patient was sinking rapidly, and she expired at eight o'clock in the morning.

REMARKS.

The termination of this case was such as might have been anticipated from the first. The great age of the patient, and the inflammatory affection of the chest, rendered her

a very unfavourable subject for an operation.

The body was not examined; but no doubt existed in my mind that the pulmonary affection was the cause of death. I was very particular in attending to the state of the abdomen, and frequently applied pressure to ascertain whether any inflammation was present: the patient never shrunk from that pressure; and the fact of the bowels acting so freely after the performance of the operation, proves it to have been successful in removing all strangulation from the intestine.

I never remember to have seen stercoraceous vomiting occurring so rapidly after the first symptoms of strangulation appeared, and can account for it only by the general constipated state of the patient's bowels. Throughout her former illness, when she was labouring under the acute symptoms of pneumonia, she had taken powerful aperient medicines, which acted only in a trifling degree. The alimentary canal was in all probability loaded with feculent matter, which, in the violent inverted action that took place, was ejected from the stomach.

In performing this operation, if a young surgeon had trusted merely to his knowledge and recollection of the various fasciæ con-

nected with the anatomy of inguinal hernia, he would have found himself labouring under considerable perplexity ; because those parts which may appear very distinct and free from confusion, when seen on a dead subject properly prepared for demonstration, present a very different aspect to the operator on a living body. If he expects to find in operating, and to raise in regular succession, the numerous fasciæ, the names and connections of which he has been at so much trouble to understand, he will be greatly deceived. On the contrary, he is frequently obliged to cut into a confused mass of parts, where every touch of the scalpel causes a trifling hæmorrhage, which renders the confusion still greater.

By these observations, I do not wish to undervalue the necessity of a thorough and perfect acquaintance with all the connections and relations of the different parts as seen in the dissection of the subject ; my object is, to make the younger surgeon aware of the difference he will witness between those parts as viewed in dissecting the dead, and operating upon the living body ; and to prepare him for the difficulties, which, in the course of practice, he will have to encounter.

In this case, when about to make the first

incision, the integument covering the tumour was pinched up in the same manner as we adopt when cutting an issue, and then freely divided. This is certainly a good plan when the skin is loose and flabby ; the first part of the operation is thereby more expeditiously performed, and perhaps with less pain to the patient than when the knife is drawn deliberately over the surface of the hernia. This advice is contrary to the opinion of Mr. Lawrence, who considers it a more painful process, and having an appearance of awkwardness ; but, when I have employed this method, I have observed that the patients seemed to suffer less than they do when the operation is commenced in the ordinary way.

In performing this operation, I found the neck of the sac so rigid, and the stricture so narrow, that considerable danger arose from dividing it with the instruments in common use. In fact, the bistoures and directors usually sold by the cutlers are very clumsy instruments, and totally unfit for so delicate an operation as that for hernia frequently is. It occasionally happens that the surgeon is able to introduce the tip of his finger or nail between the intestine and the part forming the stricture, and it is divided without much

72 OBJECTION TO THE COMMON INSTRUMENTS.

difficulty ; but when the neck of the sac is the part which causes the strangulation of the intestine, and is very narrow and rigid, it is a most dangerous attempt to pass in a director and bistoury of the usual dimensions ; and the force (although in reality it may be trifling) required for their introduction, must necessarily be productive of much injury to the tender and inflamed intestine.

CASE OF STRANGULATED DIRECT OR VENTRO-
INGUINAL HERNIA.—THE OPERATION SUC-
CESSFUL.—PATIENT AFTERWARDS ATTACKED
WITH EPILEPSY.

William Giles, an iron-founder, aged twenty-nine, has been subject to a rupture for six years; but never having experienced any serious inconvenience from it until the present time, and the hernia itself being small, he did not suppose that the application of a truss was necessary.

He is a powerful muscular man, temperate in his habits, and has enjoyed good health. He had gone, as usual, to his work early in the morning, and in consequence of making some violent exertion, he felt that the hernia had descended lower than usual, and he was soon after attacked with severe pain in the bowels, accompanied with a disposition to vomit.

I was called to him at seven o'clock in the morning of the 19th of January, a short time after he was obliged to return home from his work, when he appeared to suffer very acute pain; and even before I attempted the taxis,

he anxiously enquired “whether I could not cut down upon the swelling?” The tumour, which was as large as a common-sized lemon, presented some unusual characters; and upon an attentive examination I discovered that the intestine had not descended along the inguinal canal, nor under the ligaments of Poupart, but was of that description of hernia which has been called direct or ventro-inguinal.

The tumour was hard, circumscribed, and exquisitely tender, so much so, that the operation of the taxis, which I immediately resorted to, produced great pain. I continued my efforts, using gradual but gentle pressure for some time, but failed in making any reduction of the parts. The patient was then bled from a large orifice until syncope was produced; the taxis was afterwards repeated, but without effecting the least diminution in the size of the rupture. During these attempts, the pain in the bowels was increased, and the patient was much distressed by ineffectual efforts to vomit. A warm bath was procured as quickly as possible, in which the patient was immersed for half an hour, (the temperature of the water being gradually kept up,) when syncope was a second time

produced: he was then taken out, placed in blankets, and although the operation of the taxis was diligently continued, the attempts at reduction again proved unsuccessful.

The pain in the bowels was relieved for a short interval after the patient had recovered from fainting, but it soon returned in a much more aggravated degree; he described it as something in the belly that twisted round his navel; and he then vomited for the first time.

Independent of my general objection to the use of the tobacco enema, I could not calculate upon much advantage to be derived from its exhibition in the present case: for as great relaxation and exhaustion as could be expected to follow the administration of the tobacco infusion had been already produced by bleeding and the warm bath.

The tenderness of the rupture, the pain in the bowels increasing, and vomiting becoming more constant, I did not feel satisfied in allowing my patient to remain longer, without employing some more decided measures for his relief. A consultation was called, and I urged the necessity of an immediate operation, feeling convinced that any further delay would be dangerous, although not six hours

had elapsed from the time that symptoms of strangulation had supervened.

In proposing an operation at this early period, I felt justified by the consideration of the exquisite tenderness of the hernia, and the nature of the patient's constitution, who is a muscular athletic young man, accustomed to great and laborious exertions: —in such a subject the reduction of the protruded parts is less probable, and inflammation, with its consequences, are much more rapid, than in a person whose system has been enervated by disease, or rendered weak by a sedentary and inactive life.

THE OPERATION

was performed at one o'clock, noon. I commenced the incision more than an inch above the part where the intestine appeared to protrude from the cavity of the abdomen, in order to give me greater facility in dividing the stricture.

After the integument and superficial fasciæ were freely divided, the spermatic cord was seen running obliquely across the lower part of the wound. I pushed it gently downwards, and directed my assistant to place his finger upon it. The layers of fasciæ covering the hernial sac were very

thin, and it was difficult to distinguish the difference between the true peritoneal covering and the intestine which was seen through it, presenting a very livid colour.

The sac was cautiously pinched up, taking care to avoid including any portion of the intestine; then, holding the knife horizontally, I made a small opening into it, which was afterwards enlarged by the bistoury. It was not until the sac had been freely opened, that any serum escaped, and then only a very small quantity. About three inches of the jejunum was exposed, in colour more resembling a ripe plum than any thing else with which I can compare it. The greatest caution was required in passing a very fine director into the neck of the sac, which was very firm, and formed the stricture. Previous to its division, I pressed my little finger gently against it, and felt the pulsation of an artery, which, from its situation, must have been the epigastric. The neck of the sac was divided in a direction upwards, but inclining a little inwards towards the pubes.

When the intestine was replaced within the cavity of the abdomen, I passed my finger into the neck of the sac, the edges of which

had formed a circle of almost cartilaginous hardness, and I then very distinctly felt the pulsation of the epigastric artery. This vessel would inevitably have been wounded, had the incision of the stricture been carried outwards in the direction of the ilium.

The following history of the progress of the case is transcribed from my note book.

7 o'clock, post mer. Bowels have not been opened since the operation. The patient has occasional sickness. Pulse 120, full and strong. He complains of slight tenderness on pressing the abdomen. Twenty-four ounces of blood were abstracted, and he was ordered to take an ounce of castor oil. The blood, in the act of flowing, was highly oxygenated, but when cool had no buffy coat.

January 20th. I was called to the patient at five o'clock in the morning. The castor oil had not operated. He had passed a very restless night, and complained greatly of pain in his bowels, but has not vomited since he took the castor oil. Pulse 130, full. Skin very hot and dry. There is excessive tenderness of the abdomen, and the patient lies with his knees elevated, and says that he cannot bear the pressure of the bed clothes. The bleeding was repeated to thirty ounces;

and I afterwards directed an enema to be administered, which produced a copious watery evacuation. He is to take a saline mixture with large doses of emetic tartar every two or three hours.

In the evening. The blood abstracted this morning is much buffed. Symptoms the same as before, with the exception of the tenderness of the abdomen being somewhat diminished. Urine high coloured. He is to continue the saline medicine.

January 21st, in the morning. He has passed another restless night. The right testicle is swollen, and he complains of great pain in the loins. Tongue furred and brown. Urine very high coloured. Bowels have not been opened since the effect of the enema yesterday. No tenderness of the abdomen remaining. Pulse 96, small. He is very low and dispirited. Ordered a warm fomentation to the testicle, and he is to take half an ounce of castor oil. Diet, chicken broth.

In the evening. Bowels have been violently acted upon by the castor oil, which had produced nine evacuations. The pulse is exceedingly small and fluttering. He appears to be sinking. I remained in the house during the night, and supported the patient

80 ALARMING EXHAUSTION OF THE PATIENT.

by making him swallow wine and warm arrow root, at regular intervals.

About two o'clock in the morning he dozed for a short time, then suddenly starting upright in bed he fell on the floor. I thought he had expired, and it was some minutes before I could feel the pulse at the wrist.

He gradually became sensible, and swallowed some brandy and hot water. I watched him with the greatest anxiety until seven o'clock, (giving him every half hour wine and arrow root,) when his pulse having become firmer I ventured to leave him.

January 22d, 11 o'clock, ante mer. He is much improved since I left him in the morning. Pulse 94, but very feeble. Urine high coloured. Skin very hot. Swelling of the testicle diminished; pain in the loins nearly gone. Removed the dressings, and found that the wound had not united by the first intention, but there is considerable discharge from it. I ordered the wine to be given less frequently.

In the evening. Upon the whole the patient has passed rather a comfortable day. The bowels have been disturbed only once since the morning. Pulse 96, and firmer.

January 23rd, 10 o'clock, ante mer. The

patient slept well during the night, and feels much better this morning. Pulse 82. Skin cooler. Tongue clearing. The wound still discharges, and the testicle remains a little swollen.

From this period nothing particular occurred; he remained in a state of great debility for some weeks, but ultimately recovered, and at the present time is in the enjoyment of good health.

It is rather a curious and uncommon circumstance, that in the course of a month after the wound healed the patient was seized with epilepsy; the fits at first were very frequent, occurring every two or three days;—the intervals between the paroxysms became gradually longer, although he did not apparently derive any material benefit from the various plans of treatment which were adopted. The Pilulæ Cupri. Ammon. seemed to produce more decided effects, than any other medicine that was prescribed for him; under the influence of this powerful tonic, the fits became milder and less frequent, until they entirely ceased to affect him; and now more than two years have elapsed without any recurrence of the convulsions.

REMARKS.

Two very obvious questions must arise from the perusal of this case. Was the patient bled too freely?—Did the symptoms warrant so large an abstraction of blood after the operation?

The state of collapse and exhaustion which so soon followed the second bleeding, would be a sufficient reason for supposing that the patient could not support such copious depletion.—But on the other hand, the robustness of his constitution, his youth, active habits, and mode of life, would teach us not to spare the lancet; and from the uncontrollable rapidity with which I have seen inflammation following an operation for hernia run its course, I am convinced that only the most vigorous measures can arrest its progress.

In such cases, we must not temporize; if we trust to small bleedings, and the application of leeches to the abdomen, we shall be deceived; and instead of checking the inflammation at its onset, the symptoms are only palliated, while the disease itself is proceeding to a fatal termination.

This patient had lost fifty-four ounces of blood in the course of eleven hours, besides a large quantity which was abstracted before

the operation, for the purpose of producing syncope; but it was not until after the violent operation of the castor oil that symptoms of exhaustion came on. It required, then, the greatest care to prevent him sinking; and had I not acted in the capacity of a nurse as well as surgeon, I believe that the result of this case would not have been so gratifying to me.

The swelling of the testicle may be accounted for by the exposure and fingering of the spermatic cord producing inflammation which extended along it to the substance of the gland; but having seen several cases of common scrotal hernia, where the spermatic cord was exposed to a much greater extent, and was more roughly handled, and yet no inflammation or swelling of the testicle followed, I am not positive in my opinion of the exciting cause in the present instance.

It is not necessary to speculate much upon the cause that produced the epilepsy. The patient having passed the age of puberty without experiencing an attack, and never having been subject to any eruptive disorder which had been suddenly suppressed, nor predisposed to any other common exciting cause of this complaint, we must suppose by its

commencement, when he was in a state of great weakness, that he laboured under that species of epilepsy which Cullen terms “*Epilepsia ab inanitione* ;”—and the fact of the disease not yielding until the strength of the patient was re-established confirms this opinion. I am quite convinced that it was independent of any affection or irritation of the stomach and bowels, for particular attention was paid to the state of the digestive organs, and their functions were regularly performed.

CASE OF STRANGULATED FEMORAL HERNIA IN
A FEMALE, SEVENTY YEARS OLD.—ACUTE
SYMPTOMS OF PNEUMONIA FOLLOWED THE
OPERATION.—RECOVERY OF THE PATIENT.

On Tuesday evening, the 16th of March, I was sent for into the country to perform the operation for hernia. The patient, Mrs. Lewis, aged seventy years, was labouring under very decided symptoms of strangulation of the intestine. Upon enquiry, I ascertained that the bowels had not been opened since the preceding Wednesday. On Thursday, she suffered much pain;—on Friday morning vomiting first came on, which has continued with little intermission up to the present time; and yesterday and to-day the matter ejected from the stomach was of a feculent nature.

On Thursday the patient took some powerful aperient, since that time no medicine had been prescribed for her in consequence of the extremely irritable state of the stomach.

I found a roundish tumour rather larger than a billiard ball, partly situated upon, and partly below, Poupart's ligament; so that on

a superficial examination, it might have been mistaken for an inguinal hernia ; it was not very tense, but exceedingly tender and painful when touched.

Conjoined with the symptoms usually present in all cases of strangulated intestine, was a very troublesome hiccough ; the countenance indicated great anxiety and distress, and the patient expressed herself perfectly willing to submit to any thing I might propose. I tried the taxis for some time, but with no success ; indeed, a reduction of the protruded parts was scarcely to be expected, considering the length of time that had elapsed since the first symptoms of strangulation had appeared. My friend, Mr. Clarke, who accompanied me, agreed in opinion as to the propriety of an immediate

OPERATION,

which was performed at nine o'clock in the evening. I commenced the incision considerably above the line of Poupart's ligament, and continued it downwards to the base of the tumour ; another cut was made across this through the common integument. The four flaps thus made, were each raised separately, and the whole of the skin was dissected from the tumour.

The hernia was prevented descending lower down the thigh, in consequence of the strong attachment of the *Fascia Lata*; the apex of the tumour was therefore turned upwards on *Poupart's ligament*, occupying the place, and having somewhat of the appearance, of an *inguinal hernia*. The *fasciæ* and connections being cut through, the tumour was allowed to descend, and its size and shape became materially altered.

The patient, although subject to a rupture for twelve years, had never worn a *truss*, and, in consequence of this, the various *fasciæ* were exceedingly thin; six or eight distinct membranous layers were raised, (and if I had been inclined to divide them more minutely, I could have multiplied them to almost as many more,) before the surface of the true *sac* was exposed, which it was difficult by *candle-light* to distinguish from the *intestine*, as its dark-coloured and turgid vessels were plainly seen through the thin *peritoneal* covering.

When the *sac* was opened, from two to three ounces of reddish-coloured serum escaped, and about three inches of small *intestine* was brought into view. The colour of the *gut* was very livid, but I was happy to find

its texture uncommonly firm, and not so much altered as might have been expected from the length of time it had remained in a state of strangulation.

I experienced considerable difficulty, not only in dividing the stricture, which was situated at the internal or deep-seated crescentic arch ; but after it had been cut a little in different directions, as far as I considered safe, I had the greatest trouble in reducing the intestine, the lower surface of which was firmly agglutinated by means of coagulable lymph to the neck of the sac ; and it was not until these adhesions had been carefully destroyed that I succeeded in returning it within the cavity of the abdomen.

I never remember to have felt the coats of the intestine so greatly thickened as they were in this case ; a small portion of hard feculent matter was contained in the canal, and the gut itself felt altogether more like a small scrotum and testicle, than a fold of delicate intestine protruded through its natural boundary.

Although not a table-spoonful of blood was lost during the performance of the operation, the patient was much exhausted before she could be removed to her bed. The pulse was

70, and very small. A cordial was administered, and she was ordered to drink frequently some good mutton broth. I prescribed a pill containing two grains of calomel, and half a grain of opium, to be taken every four hours.

March 16th, 8 o'clock, ante mer. The patient has passed rather a comfortable night, having at the latter part obtained some sleep, the first she has enjoyed since the preceding Wednesday. No vomiting or sickness has occurred since the operation. The bladder has acted freely, and she has passed one small scybala, which most probably had been lodged in the lower part of the rectum. Pulse 75, and intermitting. Tongue furred. She complains of slight pain and tenderness of the abdomen. I ordered a common enema to be administered, and directed the calomel and opium pills to be continued.

7 o'clock, post mer. Bowels have not been opened, the enema having returned unaccompanied with any feculent matter. The patient complains much of griping pains; she has taken six of the calomel and opium pills, and says that she feels an unpleasant taste in her mouth. Pulse 75, and intermitting. Ordered the pills to be discon-

tinued, and an ounce of castor oil to be taken immediately.

March 18th, 11 o'clock, ante mer. She has passed a good night, having slept undisturbed until two o'clock this morning, when the oil operated violently, and she has since had seven copious but healthy evacuations. There is now not the least pain or tenderness of the abdomen, no sickness, nor hiccough. The Pulse is 70, but very small and intermittent.

7 o'clock, post mer. I again visited the patient, and found that she had remained free from pain all day, and that the bowels had not been disturbed since the morning. Pulse 75, somewhat fuller and stronger than in the morning, although still intermitting about every thirteenth beat. She is now rather restless, and complains of slight pain in the bowels.

March 19th, 11 o'clock, ante mer. She has passed a good night, and is altogether much better. Pulse 76, and still intermitting. She is much more cheerful, and, for the first time, expresses a hope of recovery. She is to take eggs and broth; and if the bowels do not act in the course of the day, I ordered that a small quantity of castor oil should be given at bed time.

March 20th, 4 o'clock, post mer. The patient slept well during the greatest part of the night. The castor oil was taken at bed time and operated twice this morning; the evacuations were healthy. Pulse 80, but still intermitting about every fifteenth beat. I dressed the wound, and found it almost healed, excepting at the extreme edges of the four flaps; but there is considerable tumefaction about the groin, and a general redness of the integuments.

March 21st. A messenger came to my house early this morning stating that the patient was much worse, and desired my immediate attention, but I was so circumstanced that I could not visit her before two o'clock in the afternoon. I found that in the night the patient was seized with a violent rigor that lasted two hours; since which she has been greatly troubled with a cough and difficulty of breathing. The cough causes pain in the abdomen. Pulse 94, strong but intermitting. Tongue much furred, and there is great thirst. I abstracted ten ounces of blood from the arm, ordered a blister to be applied to the chest, and prescribed a saline expectorating mixture to be taken every two

or three hours. The blood on cooling was much buffered.

March 22nd, 11 o'clock ante mer. She has passed a tolerably good night. Cough less troublesome; expectoration free; respiration natural; tongue moister. Pulse 76, soft, and intermitting. Bowels have been well opened this morning. Although there is considerable swelling about the wound, it is not painful; but the corners of the four flaps are beginning to slough: a poultice is to be applied, and the patient is to continue her medicine.

March 23rd, 5 o'clock post mer. The patient in every respect is improving. Cough nearly gone. Tongue clean. Pulse 76. Considerable tumefaction still remains around the groin; the wound has sloughed a little at the corners of the four flaps. The bowels have acted since yesterday. The poultice is to be continued.

March 25th. Going on as favourably as could be expected; the swelling is much reduced, the wound looks healthy, and granulations are forming. Omitted the poultice, and dressed with simple cerate. The bowels have acted regularly since the 23rd. The intermission in the pulse is now not perceptible.

From this date, no circumstance worthy of remark occurred, and in the course of a month after the operation, the patient was able to walk about.

REMARKS.

This case shews how the operation for hernia may succeed, even under the most unpromising circumstances, and justifies its performance, although the condition of the patient may appear desperate and hopeless. When the age and feebleness of this patient,—the length of time which had elapsed since strangulation had commenced,—the sterco-raceous vomiting and hiccough—were all taken into consideration, the case presented such features as rendered her recovery not only a matter of great doubt, but almost an impossibility.

My principal object for selecting this amongst others for publication is, to encourage my professional brethren, should similar cases present themselves in their practice, to advise and urge the propriety of an operation, even if it be undertaken with a most uncertain prospect of success. The surgeon who regards merely the reputation of being fortunate or successful in his operations, who selects, and will operate only on

such cases as he thinks are certain of a prosperous result, cannot appreciate the feelings of satisfaction derived from the happy termination of such a case as this. Indeed under no circumstances is the triumph of surgery (if I may be allowed the expression) so evident, as in the successful result of an operation for hernia, performed when a patient is labouring under its alarming and painful effects: it carries with it the most convincing proofs of its efficacy, and even should recovery not follow, the amelioration of all the symptoms which result from its performance, entitle the operator to the thanks of the sufferer, and cannot fail to raise a strong feeling of gratitude in the minds of the friends and relatives.

Those who are extensively engaged in the practice of surgery, must have remarked how frequently symptoms of severe pulmonary affection follow the performance of capital operations. The case which I have last related affords an example of pneumonia occurring in a very short period after the performance of an operation for hernia. It was treated as an idiopathic affection, and I was not deterred by the peculiar situation of the patient, or the intermission of the

pulse, from adopting vigorous remedies, at the same time having a due regard to her great age and reduced strength. She was accordingly bled and blistered, and ordered to take a mixture which contained nauseating doses of ipecacuanha.

The good effects of this plan of treatment soon became evident, for in the course of twenty-four hours the severity of the pulmonary affection was mitigated.

The most alarming symptom that occurred, during the progress of the case, was the intermission of the pulse:—it did not appear to be dependant upon any organic affection of the heart or great vessels, as it was not present before the performance of the operation, and ceased to be perceptible as the patient approached recovery. It could not have been owing to the loss of blood, for in the operation no vessel of importance was divided, and venæsection had never been employed preparatory to the use of the knife. I therefore attribute it to the shock the nervous system sustained by the operation, which was necessarily tedious and painful: and, since the occurrence of this case, I have noticed an intermission in the pulse in two instances where I removed the breast for a

cancerous affection. In both these cases, the pulse intermitted in the course of two hours after the operation, and its irregular action continued in the one for three, and in the other for five days; without being attended or followed by any unpleasant result.

An intermission in the pulse following the performance of any of the capital operations of surgery, being generally accounted a most alarming symptom, I mention these circumstances as they may prove valuable, and lead others not to be too hasty in forming an unfavourable prognosis.

If the intermission occurs in the course of one or two hours after the operation, and we find that it does not gradually become more frequent, we must not invariably consider it as a fatal, nor even an alarming, precursor. If, on the contrary, it comes on in the course of the second or third day, it certainly denotes much danger; but generally other concomitant symptoms, of a formidable nature, are present which render us sufficiently alive to the situation of the patient.

This case is interesting and useful, as it shews that a femoral hernia may occasionally continue for a very long time in a state of

strangulation, without the production of mortification of the intestine. Six days had elapsed between the first symptoms of strangulation and the performance of the operation. The stricture was one of the narrowest I ever felt, for I found it quite impossible to introduce the tip of my little finger, and had great difficulty in passing upwards a bistoury with a sliding guard for the purpose of dividing it. Notwithstanding this sharp and narrow stricture, and the length of time the intestine had been strangulated, it was not so much changed or apparently injured as I have frequently observed it to be in some cases where the operation was performed in the course of a few hours after the first symptoms of strangulation had appeared.

By the perusal of this case, we are induced to value the remarks made by Mr. Lawrence, in his excellent treatise on ruptures. On the different species of strangulation that accomplished surgeon says, "We discriminate between the acute or inflammatory, and the chronic or slow, kinds of strangulation."

When we know that the former occurs in young subjects, in small and recently formed hernias, and the latter is met with in old subjects, and most commonly where the rup-

ture is large, the valuable practical inferences derived from this knowledge require little comment. It teaches us to operate early in the one case; and leads us to hope in the other that recovery will follow, although the parts may have remained for a very long time in a state of strangulation.

CASE OF STRANGULATED UMBILICAL HERNIA.

—OPERATION FOLLOWED BY ENTERITIS.—

DEATH OF THE PATIENT.

Mrs. A., a very corpulent woman, upwards of seventy, had been subject to an Umbilical Hernia for many years, but she had never worn a truss, nor experienced any inconvenience from the rupture until the present time, July 13th, 1827. The tumour was generally flaccid, and by gentle pressure the greater part of its contents could be replaced within the abdomen.

With the exception of a very torpid state of the bowels, which required the frequent use of purgative medicines, the patient, considering her age, enjoyed a good state of health, was of a remarkably cheerful disposition, and of very temperate habits.

On the morning of July the 13th, when straining to evacuate the bowels, she felt that the hernia became larger and more tense than usual, and on endeavouring to reduce its size she was prevented by some uncommon resistance. She was shortly afterwards seized with acute pain around the umbilicus; this

was succeeded by nausea, and a disposition to vomit.

She was bled freely, purgative medicines were prescribed, cold applications were directed to the tumour, and the taxis was long and carefully employed, but without success. The bowels were not relieved, no diminution in the size of the tumour was effected, and in the course of the evening the vomiting had become very distressing.

July 14th. The symptoms continued during the night without any alteration. Two tobacco enemas had been administered, one in the night, the other early this morning. They produced great exhaustion which continued for some hours, but no good effect was derived from their use, as the hernia could not be reduced, the taxis again proving unsuccessful.

At noon I was desired to visit the patient, and I found her suffering very acute pain: she complained of great soreness in the tumour, and tenderness all over the abdomen, which could not bear the slightest pressure. The vomiting was almost constant; and the ejected matter was very offensive, although not decidedly of a feculent nature. She had recovered from the effects of the tobacco

enema, and the pulse had become quick and wiry. I abstracted sixteen ounces of blood, which was much buffed, and then attempted the taxis; but the tumour had become so tender that my efforts at reduction caused the greatest pain. I persevered for a short time, but became convinced that the operation, which afforded the only hope of relief, could no longer with propriety be delayed.

I explained the nature of the case to the patient, a very intelligent lady, and, being aware of the danger of her situation, she most cheerfully acceeded to my proposal, and even requested the immediate performance of the operation.

In the presence of my father, Mr. Griffith, and some other professional gentlemen I performed the

OPERATION,

at two o'clock in the afternoon. The tumour was very tense, and measured eleven inches in circumference; it was red and inflamed at the superior part, in consequence of the frequent attempts which had been made for its reduction.

I considered, if an incision were made along the whole length of the rupture, that not only would there be an unnecessary ex-

posure and handling of the intestine, but that the number of its convolutions might be found exceedingly troublesome, and embarrass me in the future steps of the operation. I therefore made an incision about three inches in length first through the common integument, on the side of the tumour; and then gradually and cautiously raised layer after layer until the peritoneal sac was exposed; this was not dense and firm as I have generally seen it in other species of hernia, but thin and semi-transparent. An opening was carefully made into it, (when a quantity of serous fluid escaped,) and it was afterwards enlarged to the extent of the incision in the integument. I then passed my finger into the sac, and found that it contained only intestine, which was not adherent to any part of it.

The stricture at the umbilical opening was firm and almost cartilaginous, and so narrow that it felt like a piece of packthread drawn closely round the intestine. This was more remarkable as the hernia was not of recent occurrence, and the patient had frequently been able to reduce the whole of its contents. The bistoury, with a sliding guard, was then introduced into the strictured opening, which

I divided in a direction towards the linea semilunaris. The intestine was of a red colour, and so bright that it very much resembled a fine vermillion injection ; I gradually returned one portion of it after another into the abdomen, until the sac was completely emptied.

The wound was closed with sutures and adhesive plaster, a compress placed over it, and a roller applied moderately tight. The operation, although apparently long in the detail, was completed in a short time, and the patient bore it remarkably well.

In the evening I visited her, and found the pulse very quick and wiry. She complains of excessive tenderness all over the abdomen. The roller was removed in the course of an hour after the operation, as its pressure became intolerable. Bowels have not been opened, and she has vomited once since the operation. I ordered her to be bled to sixteen ounces, a fomentation to be applied to the abdomen, and ten grains of calomel to be taken immediately. The nurse was directed to give the patient a dose of castor oil in the course of the night.

July 15th, 9 o'clock, ante mer. She has passed a very restless night, and complains of

pain and soreness all over the abdomen. Bowels have not been opened. She vomited this morning, but not till some hours after the castor oil had been given. Pulse 110, and wiry. Tongue much furred. Respiration hurried. She cannot bear the slightest pressure on the abdomen. Fourteen ounces of blood were taken from the arm. Ordered thirty leeches to be applied, and an aperient draught in a state of effervescence to be taken every two or three hours.

July 16th, 8 o'clock, ante mer. Although the bowels have acted once spontaneously since the enema was administered yesterday evening, there is no improvement in the condition of the patient. The vomiting and hiccough still continue, and the abdomen is more tense. The pulse is fluttering, and so rapid as not to be easily counted.

In the evening I again visited the patient, and found her, although perfectly sensible, sinking rapidly:—the extremities were cold, and the hiccough very troublesome. She expired early the following morning.

REMARKS.

Almost every practical writer in surgery has noticed how rarely the operation for strangulated umbilical hernia is attended with

a successful result; and the present case affords an example of enteritis proceeding to a fatal termination, although attempts were made to arrest its progress by the most vigorous remedies.

As the patient was a very corpulent woman, I expected to find some portion of the omentum in the sac, but it contained only a part of the small intestine, which was greatly distended with air. I have had frequent opportunities of dissecting umbilical hernias, and invariably found them to consist of portions of the colon, surrounded and enveloped, more or less, by the omentum; but I never observed in the dead subject any part of the small intestine contained in the sac.

Two reasons induced me to make the first incision on the side of the tumour, and not along its upper or most prominent surface. The principal one was the inequality or irregularity of the peritoneal sac which is usually met with at the front of the rupture: indeed it generally happens that the several parts are so much consolidated that the true sac cannot be easily distinguished, although I do not agree with some writers who suppose that it is entirely wanting, or does not extend upwards so far as to form an entire covering

to the contents of the tumour. The second reason was, the red and inflamed condition of the integument covering the front of the rupture, produced by the repeated and long-continued use of the taxis. If an incision were made in that part, I thought the wound would not heal by the first intention, but in all probability would be followed by sloughing: a circumstance much to be dreaded, and more particularly in this species of hernia.

I once saw a very celebrated surgeon operate in a case of large umbilical hernia:—he made an incision along the whole length of the tumour, and afterwards opened the sac to its fullest extent. An immense quantity of omentum and intestine was immediately exposed; the convolutions of the latter were exceedingly troublesome; and I well remember that two pairs of hands were required to confine them before the operator could venture to divide the stricture, and when this was accomplished, a considerable length of time elapsed before every portion of the bowel could be replaced within the abdomen.

The recollection of this case, induced me to make an incision of such a length as would enable me to feel for, and divide, the stricture with facility, while at the same time there

would be no unnecessary exposure of the contents of the hernia.

In all cases of large umbilical hernia, requiring an operation, I should advise the surgeon to make his incision at the side of the tumour, and not along the front, as it will be nearer the strictured part which can be more readily divided; and also, because when any adhesion either of the omentum or intestine exists, I have found it to occur most frequently at the prominent or superior part of the rupture.

This advice is contrary to the opinion expressed by Sir Astley Cooper, who recommends an incision to be made over the tumour in the form of a letter T inverted. It may appear presumptuous in me to differ from so great an authority, but having repeatedly seen, in dissection, not only the sac and integument firmly united, but the intestine and omentum also inseparably adherent to the front or most prominent part of the tumour, I am convinced that in a majority of cases it would be impossible to perform the operation in the manner recommended by Sir A. Cooper without great danger of wounding the intestine.

Although I am far from contending that

adhesions do not occasionally exist at the sides of the rupture, still, as far as they are concerned, no greater difficulty will be met with in performing the operation, if the incision be made according to my recommendation, than the surgeon would have to contend with if he commenced his operation on the front of the tumour; while by this method he possesses the great advantage of being much nearer the seat of stricture, which can be divided without the necessity of exposing the whole contents of the hænia.

CASE OF STRANGULATED FEMORAL HERNIA
OCCURRING IN A FEMALE NEAR EIGHTY
YEARS OLD.—TOTAL WANT OF SERUM IN
THE SAC; AND REMARKABLE ADHESION
BETWEEN THE OMENTUM, THE SAC, AND
THE INTESTINE.—THE OPERATION SUCCESS-
FUL, AFTER THE INTESTINE HAD REMAINED
IN A STATE OF STRANGULATION SEVEN DAYS.

Mrs. Marston, aged **77**, has had a reducible femoral hernia for three years, and never having suffered any inconvenience from it previous to the present time, she has neglected the necessary precaution of wearing a truss. The patient is a remarkably thin and apparently weak woman, although, with the exception of her present illness, she has enjoyed a state of almost uninterrupted good health. She was capable of unusual bodily exertion for a woman at her time of life, and could undergo great fatigue, as was proved by the fact of her having walked nearly thirty miles in a day but a few weeks previous to the time when she was compelled to submit to the operation, the particulars of which I am about to relate.

On Wednesday, the 29th of June, she was affected with very acute pain in the abdomen: her bowels had been constipated for some days previous; on Thursday vomiting commenced, and continued with little intermission up to Tuesday, the 5th of July, the time I first visited her.

A variety of purgative medicines had been prescribed for her during the week, and several enemas were administered, without affording any relief, as the former were immediately rejected by the stomach, and the latter returned unaccompanied with any feculent matter.

On my visiting the patient I discovered that she had a very small Femoral Hernia, in a state of strangulation. The rupture was not very tense or painful when pressed upon; it did not rise up abruptly from under Poupart's ligament, so as to form a prominent and well defined tumour; but it was compressed or flattened, and felt like an enlarged lymphatic gland advancing towards suppuration. At this time, the symptoms were very urgent; the patient was harrassed by hic-cough, and almost constant vomiting; her pulse was small, fluttering, and very rapid; the countenance anxious; and the surface of the

body covered with a cold perspiration. The abdomen was not much distended, and pressure upon it did not cause any particular uneasiness, excepting when applied to the part imminently above the ligament of Poupart.

Notwithstanding the tumour was soft and puffy, and the resistance not so great as is generally met with in cases where the contents of a hernia have remained very long in a strangulated condition, I found a reduction of the protruded parts quite impracticable ; and I was obliged to relinquish the taxis after a careful and protracted trial.

When I considered the advanced age of the patient, the great prostration of strength, and the length of time which had elapsed since the decisive symptoms of strangulation appeared, I did not feel justified in adopting any of those auxiliary methods which are generally employed to promote the success of the taxis. The alarming nature of the case having been explained to the patient and her friends, I strongly urged the necessity of an operation being immediately performed, as affording the only probable chance for her life. This proposal was cheerfully complied with, and the patient

exhibited unusual firmness and resolution for one so far advanced in years and exhausted by her previous sufferings.

THE OPERATION

was performed at noon, in the presence of several of my professional friends. As the tumour was small, I made only one straight incision over its surface. The different layers of fasciæ covering the peritoneal sac were very distinct, and I experienced no difficulty in raising and dividing them. This part of the operation was a complete anatomical demonstration, and was rendered very simple and easy in consequence of the bloodless state of the wound. The true sac having been fairly exposed, the difficulty of the operation commenced. I found the sac adhering so firmly, and so intimately connected with the contents of the hernia, that to make an opening into it without endangering the parts below seemed almost impossible. I endeavoured to raise a portion of it upwards with my finger and thumb, so that I might use the scalpel horizontally, and with it make a small opening for the introduction of the director and bistoury. In this attempt I failed, and was equally unsuccessful with the forceps; the sac being

inseparably attached to the whole anterior surface of the tumour, and resisting every effort made to raise any portion of it.

Although the sac itself was considerably thickened, I felt distinctly that a portion of the omentum was lying uppermost, and the discovery of this gave me greater confidence in pursuing the operation. I scratched with the point of the scalpel, until the sac was divided, and a small portion of omentum protruded through the opening. I then attempted to introduce the director, but, in consequence of the close and firm adhesion existing between the sac and the omentum, I could not pass it upwards in such a manner as would leave only the sac between that instrument and the bistoury. I was therefore obliged to force the point of the director into the omentum; then to elevate it, and push it through its substance (taking care to direct the instrument as close as possible to the surface of the sac) until it arrived as near as I could guess at the seat of the stricture. The probe-pointed bistoury having been placed in the groove of the director, the sac and the most superficial portion of the omentum contained within it were freely divided. I then discovered

114 ADHESION OF THE INTESTINE TO THE SAC.

that the omentum was also firmly attached to the sides and lower part of the sac: these adhesions I was obliged to tear asunder with my finger and the handle of the scalpel, before I could expose any part of the intestine. The gut was at length brought into view; it presented a very livid colour, but was so firm to the touch that I should have felt no hesitation as to the propriety of replacing it within the cavity of the abdomen, when liberated from the strangulation.

The stricture was produced by the neck of the sac, which was divided without much difficulty, but in attempting to return the intestine I found that its lower surface was attached to the sac through the medium of coagulable lymph and two or three membranous bands. These adhesions prevented the free return of the intestine, and, for a moment, I hesitated whether to remain satisfied with the division of the stricture and allow the intestine to remain in the sac, or to destroy these attachments, so as to be able to effect a reduction of the whole of the protruded parts. I resolved upon the latter plan, and having carefully divided the membranous bands, the intestine was very easily replaced within the abdomen.

The patient was much exhausted by so protracted an operation; and when placed in bed I found it necessary to give her a powerful cordial. The extremities became cold, the pulse scarcely perceptible, and the prostration of strength so great as to threaten almost immediate dissolution. I directed bottles of warm water to be applied to the feet, and desired that she might take frequently some strong beef tea, and a small quantity of brandy.

I visited her at seven o'clock in the evening, and was happy to find that she had rallied considerably. The extremities had become warm, the pulse firmer, although still very rapid, the hiccough and vomiting had entirely ceased since the operation, and the patient no longer complained of any uneasiness in the bowels. I ordered the brandy to be discontinued, and in its place a little wine and water to be given every two or three hours.

Wednesday, 9 o'clock, ante mer. This morning there is a visible improvement in the condition of the patient. She slept nearly three hours during the night, and has remained quite free from any disposition to vomit. Pulse 94. Tongue much furred.

The bowels have not been opened, but there is no tension nor tenderness of the abdomen. I desired the beef tea to be continued, but the quantity of wine to be diminished.

7 o'clock, post mer. She has taken freely of the beef tea during the day, and is now cheerful, and expresses confidence in her recovery. Pulse 86, and fuller than in the morning. The bowels have not been opened since the operation, I therefore ordered a dose of castor oil to be given immediately.

Thursday, the 7th. I was desired to visit the patient early this morning. The castor oil had acted violently, producing eleven or twelve copious evacuations, and the patient is now apparently exhausted, and in as great danger as she was immediately after the performance of the operation. I was again obliged to have recourse to the brandy, and prescribed a mixture containing the Volatile Alkali and Aromatic Confection to be given every hour.

9 o'clock, post mer. The bowels have not been acted upon since nine o'clock this morning, and the patient has experienced the good effects of the stimulants which have been administered to her in the course of the day. The pulse continues small, but is not

so rapid or fluttering as in the morning. I ordered a draught containing fifty drops of Tinct. Opii. to be given at bed time.

Friday morning. The patient has passed a good night, and, but for the excessive debility she labours under, there is every prospect of a rapid recovery. The bowels have acted once this morning comfortably. There is no sickness, or tenderness of the abdomen. I removed the dressings, and found the wound almost closed with the exception of the lower part.

As no unusual symptoms occurred after Friday, it would be useless to transcribe from my note book the further particulars relating to this case. The patient, notwithstanding her advanced age and great debility, was able to leave her bed in the course of a fortnight, and in less than a month after the performance of the operation she walked to my house for the purpose of returning thanks.

REMARKS.

This case is valuable if considered in no other light than as a proof of the great efficacy of the operation, and as an additional authority for its performance on those patients who are very far advanced in years.

The case of Mrs. Lewis, related in the

preceding part of the volume is also satisfactory, and I feel anxious that the reader's attention should be particularly directed to them, because I know that in many instances, the advanced age of the patient has been considered a very formidable objection to the operation for strangulated hernia; and, in consequence of this very erroneous supposition, many valuable lives have been lost which in all probability might have been preserved by a timely and judicious use of the knife. I could adduce other examples of the good effects derived from the operation when performed upon patients who had passed the age of seventy, but these two have been selected as affording some interesting and unusual phenomena connected with the progress and treatment of strangulated hernia.

The total absence of serum in the peritoneal sac was the more remarkable, in consideration of the great length of time which had elapsed since the intestine had first become strangulated. No effusion had taken place even in the slightest degree, but on the contrary, inflammation of an adhesive character had proceeded to that extent as to cause an intimate and almost inseparable attachment, not only between the omentum

and the sac, but also between the intestine, the omentum, and the peritoneal covering. The membranous bands, by which the intestine was connected with the sac, were particularly firm, the division of them forming the most difficult part of the operation. The bands, although strong and unyielding, were evidently of recent formation, as was proved by the ease with which the patient could reduce every portion of the protruded parts, previous to the occurrence of strangulation. If their formation had taken place at an earlier period, we may suppose that the patient could not have succeeded in returning the whole of the rupture, but a part of it must have remained in an irreducible state.

I never before met with any membranous bands *within* the sac similar to those I witnessed in this case, either in operating on the living body, or in dissecting the parts after death; and I believe that their *rapid* formation is very uncommon, and seldom takes place when the intestine becomes in that condition technically termed strangulated. It is difficult to determine whether the peculiar inflammatory action producing these membranous connections between the

intestine and the sac, commenced in the peritoneal sac or in the gut itself. I am inclined to suppose that the disposition to produce them originated in the sac, and from it extended to the intestine, forming a bond of union between the two; which, although not so general and intimate, is analogous to the adhesions formed by coagulable lymph between the convolutions of the intestines, as seen in cases of peritonitis.

Surgeons who have had opportunities of examining the appearance of the viscera, and the general state of the abdominal cavity of those patients who have died from strangulated hernia, must have remarked how frequently an adhesion exists between the intestine and the peritoneum lining the abdominal muscles, at the part immediately above where the gut escapes from its natural boundary and becomes lodged in the sac. This is an admirable and wise provision, because, in the event of the formation of an artificial anus at the groin, it prevents the intestine receding, and the consequent escape of feculent matter within the cavity of the abdomen.

In this case the progress of strangulation was slow, and the contents of the rupture

had not been disturbed by any attempts at the taxes excepting only a short time previous to the performance of the operation. Therefore, if any disposition existed in the sac to form those membranous bands which have been described, nothing occurred to prevent or interrupt the process, but, on the contrary, they had become as perfect and would have answered the same purpose in case an artificial anus had been formed, as the adhesion commonly noticed *within* the abdomen between the intestine and the peritoneum.

Alarming symptoms of exhaustion occurred after the violent purgative effect of the castor oil, and nothing but the free use of cordials and powerful stimuli kept the patient from sinking. I have so frequently witnessed the excessive effects of even the mildest purgatives after operations for strangulated hernia, that I am now very cautious in administering them to patients of a feeble habit of body, or to those who are far advanced in years, but I trust almost entirely to the use of enemas, excepting in those cases where the want of an aperient is particularly indicated.

I consider purgatives admissible only under certain restrictions, for, in all cases, one strong objection to the use of drastic cathartics must

remain, namely, that they cannot produce any decided effect without irritating the intestines: and when we consider the peculiar condition of the whole line of the alimentary canal,—its proneness to inflammation after any portion has been strangulated—we should be unwilling to provoke that inflammatory action by the exhibition of stimulating medicines.

Although we should always be on our guard against the occurrence of inflammation after the operation for hernia, we must not carry the antiphlogistic plan of treatment too far when called upon to attend those who have passed the meridian of life. It is obvious that a patient who is compelled to submit to the operation, must previously have suffered great exhaustion from the effects of the strangulation, which probably may have continued several days, and, in consequence of the incessant vomiting, no aliment can have remained in the stomach. When, therefore, we take into our consideration the enfeebled state of the patient, and the shock the nervous system must necessarily have received from the operation, we shall not hesitate to prescribe a generous diet, and occasionally we shall find it necessary to administer the most powerful cordials.

CASE OF STRANGULATED FEMORAL HERNIA
COMBINED WITH PREGNANCY.—THE OPERA-
TION SUCCESSFUL.

Mrs. Williams, aged 36, has had a femoral rupture for five years, but never attempted to confine it by the application of a truss. She is the mother of several children, and has enjoyed good health, with the exception of occasional illness after her labours. At the present time she is nearly four months advanced in pregnancy.

The hernia was strangulated about three years since, but with much difficulty I succeeded in reducing it at that time; and, to prevent a repetition of the danger, I recommended the use of a truss. This advice, however, was not attended to.

On Saturday morning, September 24th, she walked to market; after making some purchases she returned home, and was immediately attacked with the most violent pain in her bowels. At one o'clock my attendance was requested, and I found her suffering very acute pain in the bowels, accompanied with frequent vomiting of a dark-coloured matter.

From these symptoms I was immediately led to suspect that the patient was again labouring under a strangulated rupture; and upon examination I found a femoral hernia, a little larger than a pigeon's egg, which was exceedingly tense and tender. The patient informed me that in the morning the tumour was as soft as usual,—that she could return it without difficulty,—and that it had become painful and tender only within the last two hours. She could not account for the change which had taken place in the rupture; and was not conscious of its enlargement until after having vomited two or three times.

I tried the taxis for a considerable time without effect. The vomiting continued,—the rupture became more painful,—the patient complained of general soreness in the abdomen, and particularly of pressure when applied to the inguinal region. She was bled from a large orifice, and fainted when about twelve ounces of blood was abstracted. The taxis was again resorted to without effecting any diminution in the size of the protruded parts. A warm bath was with difficulty procured, and some time elapsed before a sufficient quantity of water could be heated for its use. The patient, after some delay, was

placed in it, but she remained there not many minutes until syncope was produced. The taxis was a third time carefully tried, but with no better success than had followed the former attempts.

The loss of blood and the syncope produced by the use of the warm bath, were the means of procuring temporary relief from the urgency of the symptoms: the intervals of ease, however, were of short duration, as the pain in the bowels and the vomiting returned with increased severity.

Having on several occasions succeeded in reducing strangulated ruptures by the application of cold to the tumour, although the taxis had failed, after fainting had been produced by various methods, I was unwilling to propose the operation without having made a fair trial of the remedy in this instance: I accordingly directed cloths wet with spirit, vinegar, and water, to be constantly applied to the tumour; and their use was continued so long as they were likely to prove of service.

No good effect resulted from the cold application. The violence of the symptoms continuing, the operation was therefore proposed at eight o'clock in the evening; and the

patient did not make the least objection to its immediate performance.

OPERATION.

The tumour rose up very abruptly, forming a prominent point immediately below the ligament of Poupart, I was therefore cautious in making the first incision, and found the layers of fasciæ covering the peritoneal sac exceedingly thin. I never before felt so much difficulty in discovering the difference between the intestine and the sac, the latter being so transparent, and apparently in such close connection with the former. The sac was at length carefully opened, when about an ounce of serum escaped, and two or three inches of the small intestine were brought into view. The colour of the gut was not particularly livid, and it did not contain any portion of feculent matter.

The stricture was formed by the internal or deep-seated crescentic arch; it was so unusually narrow and rigid that I felt the want of some smaller and better-contrived instrument than those in common use, to enable me to divide it with safety to the intestine. The bistoury with a sliding guard was introduced, (which I have often used with advantage in this part of the operation) but

it was withdrawn without removing the slide, as I found that a fold of the intestine rose up and projected over each side, and would inevitably have been wounded if the cutting edge of the instrument had been exposed. Having failed in the use of this instrument, I was obliged to introduce a common director within the neck of the sac. The intestine being carefully pressed downwards by my assistant, a probe-pointed bistoury was placed in the groove of the director, and the stricture after some difficulty was divided in a direction upwards, but rather inclining towards the pubes. The portion of strangulated intestine was then reduced, and the wound closed by sutures. A firm compress was placed on the groin and retained in its proper place by the application of a flannel roller.

The pulse became very small and rapid after the operation, and the patient appeared rather exhausted. I ordered her to take frequently some warm beef tea, and left her about nine o'clock.

Having been called into the country the same night, I visited the patient on my return at two o'clock in the morning, and found that considerable re-action had taken place. The

skin had become very hot, and the pulse full and quick. No vomiting had occurred since the operation, but the bowels had not acted ; and as the patient complained of pain in her belly, (although there was no tenderness on pressing the abdomen,) I ordered a dose of castor oil to be given immediately.

Sunday, 25th, 10 o'clock, ante mer. Bowels have been freely moved by the castor oil, and, since it has ceased operating, the patient has slept comfortably for more than three hours. Pulse 90, and strong. There is no tenderness of the abdomen, but a troublesome cough has come on, which distresses the patient, and causes great pain and soreness in the wound. I prescribed a pectoral emulsion to be taken every three or four hours.

7 o'clock, post mer. Pulse 100, full and strong. Tongue furred. Urine high coloured. Bowels have acted twice since the morning. The cough is exceedingly troublesome, and the patient complains of pain and general soreness all over the abdomen. I took away twelve ounces of blood which was slightly inflamed.

Monday, 26th, 7 o'clock ante mer. She has passed a good night, and expresses great relief from the bleeding last evening. Pulse

90. Urine not so high-coloured. The cough is less troublesome, and she does not feel any soreness in the abdomen. She is to continue taking the pectoral emulsion.

8 o'clock post mer. Pulse 76, soft and regular. She has not been much troubled by the cough during the day. Bowels have not acted since yesterday, and therefore I ordered a small quantity of castor oil to be given.

Tuesday, 27th, 10 o'clock ante mer. Bowels have been relieved by the castor oil during the night, and the patient afterwards enjoyed some hours of refreshing sleep. The cough has become rather more troublesome this morning, but it does not cause any pain in the bowels or much soreness in the wound. Pulse 70, regular and compressible. She is to continue taking the cough mixture.

8 o'clock post mer. Symptoms the same as in the morning, with the exception of the cough which has become rather more troublesome.

Wednesday, 7 o'clock, ante mer. She has passed a bad night, having been disturbed by violent fits of coughing, attended with great pain in the abdomen and soreness of the wound. Pulse 96, and very small.

There is no particular tenderness of the abdomen.

4 o'clock, post mer. In consequence of the frequent fits of coughing the bandage has been loosened and the compress displaced from the groin. The plaisters were removed, and the wound was found to be united by the first intention. The pectoral emulsion to be continued, with the addition of ten drops of Tinct. Opii. to each dose.

Thursday, 10 o'clock, ante mer. She has passed a better night, the fits of coughing having been less frequent and of shorter duration. The bowels have not acted since Tuesday, I therefore ordered some more castor oil to be given this morning. Pulse 80. Tongue clean. In every respect improving.

8 o'clock, post mer. No unusual symptoms have occurred during the day. The castor oil has acted. The cough has almost ceased to trouble the patient.

Friday, 9 o'clock, ante mer. She has passed a very good night, without being once disturbed by the cough. Pulse regular.

From this date nothing occurred worthy of being recorded. The convalescence of the patient was progressive, and in the course of

three weeks from the performance of the operation, she was enabled to resume her ordinary avocations.

REMARKS.

This is the only case which has hitherto occurred in my practice of a woman in a state of pregnancy requiring the operation for strangulated hernia; and it is rather surprising that abortion was not produced by the shock of the operation itself, and, more particularly, by the remedies which were previously employed to give effect to the taxis. Syncope had been twice produced; in one instance by the loss of blood;—in the other, by the use of the warm bath. The exhaustion caused by the latter means was of long continuance, and almost sufficient to create alarm for the safety of the mother, independant of every consideration for that of the foetus. It was therefore with great anxiety that I watched for the symptoms of miscarriage after the performance of the operation, and informed the friends of the patient of the probability of its occurrence, to prevent their indulging in too sanguine expectations of her recovery, as she had not only to contend against the consequences of a strangulated rupture, but of a miscarriage also,

at a period of utero-gestation, generally considered somewhat dangerous.

Happily, however, my anticipations were not realized ; for with the exception of the cough, and the tendency to inflammation which was checked by bleeding, the recovery of the patient proceeded in a most satisfactory manner.

In describing the operation, allusion was made to the great difficulty I felt in distinguishing the sac from the intestine itself ; and, although the course of the blood-vessels is different in the intestine from what they take on the sac, it is not easy to discover their real distribution by candle-light, and more particularly when the parts are rendered confused by hæmorrhage. This stage of the operation requires the greatest caution and coolness of procedure. If the surgeon should lose his presence of mind, and not take sufficient time to deliberate—if he proceed rashly and in a hurried manner, because he feels afraid that the bye-standers may consider him a slow or an indecisive operator, he will, in all probability, make a mistake proving fatal to his patient.

I should not wish to exaggerate the difficulties occasionally met with in performing

for hernia, but they ought not to be underrated. The surgeon should bear in mind, that the sac occasionally does not contain even the smallest quantity of serum;—that being frequently so thin, and in such close connection with the intestine, the incision intended only to open the peritoneal covering if not made with great care and dexterity will also wound the intestine itself.

Before an opportunity occurred to me of performing the operation myself, I saw the intestine wounded more than once by timid, or perhaps rash, but at all events unskilful, operators. The impression upon my mind was so strong at witnessing these exhibitions of unskilfulness, and I have ever since felt, that in case of my being equally clumsy or unfortunate, I should not be justified in again attempting so delicate an operation and placing the life of a fellow creature in jeopardy.

I am not acquainted with any condition of the intestine, or any state of the peritoneal sac where, in performing the operation for hernia, it is impossible to avoid making an opening into the former when attempting to separate them from each other. It is no excuse to say, either that the gut was so

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closely enveloped by the sac that the one could not be opened without injuring the other, or that the texture of the intestine was so much softened, by the long-continued effects of strangulation, that it gave way upon the application of the slightest pressure.

It should be recollected that rapidity of execution does not constitute the excellence of the surgeon in performing this particular operation, but, on the contrary, we should judge of the fitness of the operator by the coolness and deliberation with which he proceeds. It is therefore most unpardonable to risk the patient's safety by rapid or hurried movements, when the surgeon by the exercise of care and calmness of mind, can easily overcome the difficulties he may have to encounter.

UNCOMMON CASE OF STRANGULATED INGUINAL
HERNIA IN THE FEMALE.—DEATH OCCUR-
RING IN THE COURSE OF EIGHTEEN HOURS
FROM THE TIME STRANGULATION COM-
MENCED.

Early in the morning of the 20th of October, 1830, I was requested to visit Mary Meredith, a poor woman, residing in one of the suburbs of this town. I found in attendance the medical gentleman appointed to the care of the paupers belonging to the parish, who had been called to the patient's assistance during the night.

The patient was a hard-working woman, fifty-two years of age, and although the subject of an enormous hernia, was able to follow her usual employment with little interruption up to the present time. She returned home from her work, which had not been more laborious than usual on the evening of the 19th in perfect health, but after drinking her tea was seized with pain in the bowels resembling cholic: this became gradually more severe, and by eight o'clock at night it was much more aggravated, and

was attended with repeated efforts at vomiting. The surgeon whom I met in consultation, was then sent for ; he prescribed some purgative medicine,—administered a tobacco enema,—and attempted a reduction of the hernia, but without success.

When I saw the patient, she appeared to be suffering great pain : the pulse was low and fluttering ; much anxiety was depicted on the countenance, and there was great exhaustion and prostration of strength, which I then attributed to the effect of a tobacco enema recently administered.

Having on a former occasion succeeded in reducing the hernia when it was in a state of incarceration, the poor woman expressed her confidence that I should not fail in the present instance. The taxis was immediately attempted, but the tumour was so tense and painful that after a short perseverance I desisted, feeling convinced that the attempt was only increasing the sufferings of the patient without affording her a reasonable prospect of relief. The abdomen was tender, and much distended ; the least pressure seemed to cause pain, and the efforts to vomit were exceedingly distressing.

The danger of her situation, of which she

seemed perfectly conscious, was then candidly stated to the patient, and the operation proposed as affording the only probable means of saving her life. To this she cheerfully acceded, and I left her for a short time, in order to make the necessary preparations and to procure proper instruments: I returned in the course of an hour with the gentleman who had been in attendance, accompanied by my partner and our pupils.

Every thing preparatory to the performance of the operation being arranged, the patient, although much exhausted, rose from her bed with apparent firmness, but faltered before she reached the table, and would have fallen on the floor had she not been timely supported. At first, I thought that the sudden change from the recumbent to the erect posture had produced a temporary syncope, from which she would recover when laid at length on the table: but it soon became apparent that her exhaustion was of a more serious nature than the effect of common syncope.

Cordials were freely administered, and we watched her for more than half an hour, in the hope that some re-action would take place, and the pulse become sufficiently firm

to warrant the performance of the operation. In this, however, we were disappointed: the patient, although perfectly sensible and earnestly desiring me to commence the operation, was evidently sinking; her extremities were cold, and the pulse almost imperceptible.

To venture the use of the knife under these circumstances, would have been the extreme of folly, and a mere love of operating: the patient was therefore again placed in bed, and although volatile alkali, and other stimulants were freely administered, she expired at one o'clock:—surviving only eighteen hours after the first symptoms of strangulation had appeared.

The rapidity with which this case had arrived at a fatal termination made me exceedingly anxious to examine the body; but the friends of the patient were of a class in society the most bigoted and violent in their prejudices against the dissection of the dead, and I knew the difficulties I had to contend with before their permission could be obtained.

After much persuasion and entreaty, they granted me leave to examine the tumour, but under the most positive conditions that I

should leave untouched every other part of the body; with this injunction I was reluctantly obliged to comply.

EXAMINATION OF THE HERNIA EIGHTEEN

HOURS AFTER DEATH.

The rupture was the largest I ever saw, measuring, in length one foot five inches; in circumference, at its broadest part, two feet three inches and a half;—it extended more than two-thirds down the thigh, and completely concealed every part of the pubes and the external organs of generation.

The examination was commenced in the same manner as I should have adopted in performing the operation, had circumstances warranted it. An incision from four to five inches in length was made along the course of the left inguinal canal, and the several layers of fasciæ were then raised, and the true hernial or peritoneal sac exposed; this was opened at its upper part (nearest to the illium), when a portion of the colon was discovered, not much inflamed, but distended with hard feculent matter, and pressing firmly on the lower contents of the tumour. The colon was followed downwards by enlarging the incision made into the sac, when numerous convolutions of the jejunum and ileum

more than a yard in length were exposed, of a black colour, and in a state of gangrene. The tendon of the external oblique muscle was next slit up, and the portion of distended colon reduced ;—when this was effected, the convolutions of the small intestine contained in the lower part of the tumour were quite free from all pressure and strangulation, and could, without any difficulty, be returned within the cavity of the abdomen. The bottom of the sac contained nearly a quart of serous fluid, which, during the life time of the patient, must have formed a considerable proportionate share of the bulk of the tumour, and given to it the regular and uniform appearance which it presented.

As no part of the omentum was in the sac, the quantity of intestine itself was insufficient to account for the length and enormous circumference of the rupture, which had not varied, but in a trifling degree, from the size it constantly presented for many years previous to the patient's death.

REMARKS.

The perusal of this case cannot fail to cause a regret that the operation was not attempted at an earlier period ; and although the hernia was of so great a magnitude as to

preclude the possibility of returning the *whole* of its contents, yet, the obstructed part of the colon which pressed upon and produced the strangulation and consequent gangrene of the small intestine, might have been released with so much facility, that an operation, trifling in itself, would in all probability have saved the life of the patient.

No necessity would have existed to make a very great incision, one of sufficient length only being required in the direction of the inguinal canal, which would enable the operator to divide the tendon of the external oblique muscle: the obstructed colon (for it was in a state that could not properly be termed strangulated) would then have been easily released, and the fatal consequence of its pressure upon the small intestine have been removed.

I should not wish to cast even the most indirect censure upon the conduct of the intelligent surgeon who had the management of this case from the time symptoms of strangulation first appeared; because it was one of great peculiarity, and proceeded to a fatal termination with unusual rapidity. But I fear that many are in the habit of waiting until exceedingly alarming symptoms

come on, before they think of an operation or consider its performance justifiable ; and this very delay, and the supervention of dangerous symptoms, render it useless ; and also bring much discredit upon the surgeon.

It should always be borne in mind that a hernia becomes dangerous, not in proportion to the length of time which it has remained in a state of strangulation, but in reference to the urgency of the symptoms which accompany that condition of the intestine ; and more particularly in regard to the size and species of the rupture, and the state of the patient's constitution. To wait, therefore, for very alarming symptoms, is, in other words, quietly to consign the patient to his fate ; and so convinced am I of the necessity of early operations, if we expect them to be attended with a successful result, that in all cases falling under my management, in which bleeding, the warm bath, the use of the taxis, aided by the application of cold to the tumour, have been carefully employed to a reasonable length of time, without effecting the reduction of the protruded parts, I proceed without further delay to the operation, which, I have the

satisfaction of stating, has almost uniformly been attended with success.

My friend Mr. Mortimer, an excellent surgeon, residing in Bristol, has had considerable practice in cases of strangulated hernia, but never lost a single patient after the performance of an operation. In a conversation which I lately had with him on the subject, he attributed his success entirely to his having in every instance operated early.

In the present case the hernia was so large, and had continued so many years in an irreducible state, that the surgeon could not expect to return half of its contents; but if the use of the taxis, after a well-directed and moderate trial, failed to make any diminution of its size, and the urgent symptoms continued, he would have been justified in proposing the operation, although but a few hours had elapsed since the strangulation commenced.

It occurred to me after the dissection of this case, that if in the use of the taxis, the attempts at reduction had been confined altogether to the upper part of the tumour, the colon which was impacted in the inguinal canal might have been reduced, and its injurious pressure removed from the small

intestine below. The inguinal canal being so much dilated throughout its whole length, by the mechanical action of the distended colon, did not appear to form at any part a stricture on that gut, so that pressure, properly applied, would certainly have reduced it.

In all cases of large hernia, which have continued for years in an irreducible state, and become at length strangulated by accident, it is useless to attempt a reduction of the great bulk of the tumour: the surgeon should be guided by his views and recollection of the anatomy, to the part where the stricture is most likely to be seated, and direct his efforts at reduction to that particular spot. If the whole circumference of the tumour be grasped with the hands, and if pressure, however great, be applied at its sides, no advantage in general will be derived from this mode of procedure; whereas, if gentle manipulation be employed at its upper part, and (if it be an inguinal hernia) in the direction of the spermatic passage, we may frequently release that part of the intestine which is directly strangulated, and relieve all the urgent symptoms without producing any considerable, or even visible, diminution in the size of the rupture.

FATAL CASE OF CYSTOCELE OR HERNIA OF THE
BLADDER, IN WHICH THE WHOLE OF THAT
VISCUS HAD ESCAPED FROM THE PELVIS,
AND WAS LODGED IN THE SCROTUM.

The subject of this uncommon affection was a Mr. Bowley, formerly residing in Shrewsbury, a very corpulent man, and upwards of sixty years of age. He had been affected with a scrotal hernia for five and twenty years, which, during that long period, had never been productive of any other inconvenience (until a short time previous to his death,) than what might have been expected from its great bulk and weight.

The patient had repeatedly suffered from constipation of the bowels, and slight attacks of hemiplegia, which, however, yielded to the ordinary remedies prescribed in such cases; his general health in other respects was good, and he was accustomed to take regular, occasionally laborious, exercise.

It was only a fortnight prior to the death of the patient that the hernia appeared to produce any alarming or dangerous effects, when the bowels became obstinately consti-

pated, and he was attacked with paralysis which affected the left side of the body. Conjoined with these symptoms was a constant stillicidium urinæ; the catheter was used several times, and according to the belief of two surgeons who were in attendance, passed into the bladder, but not more than a tea cup full of urine followed each introduction of the instrument. The cause of this, although unfortunately not ascertained during the life-time of the patient, was afterwards most satisfactorily explained by the dissection.

The patient was never affected with any of the urgent symptoms commonly attendant on strangulation of the intestine, at least they were not so decided and unequivocal as to justify the performance of an operation in the opinion of the gentlemen who attended the case.

The first object in the treatment was to procure relief for the bowels, and every method was adopted for that purpose without success. The strongest purgatives were given, and enemas repeatedly administered, without producing any beneficial effects.

As the patient was deprived of the power of voluntary motion, by the paralysis which

affected the whole of the left side of the body, his bladder was supposed also to be paralyzed; and the medical attendants considered that this opinion was confirmed by the continuance of the stillicidium urinæ.

Although no evacuation could be produced by the use of purgatives, or by the administration of enemas, the patient for several days laboured under symptoms which seemed to be more dependent upon retention of urine than constipation of the bowels: he complained of great pain about the pubes, and in the rupture, which became gradually more distended. At length the power of articulation (before much impaired) was totally lost; the sufferer could express his feelings and wants only in a low muttering tone; he shortly afterwards became delirious—and died.

The foregoing is a slight but correct history of the general symptoms of this case, with the treatment of which I was not concerned. I was present at the examination of the body, which was made twenty-four hours after death.

APPEARANCES ON DISSECTION.

The circumference of the rupture was two feet five inches; its greatest length, measuring

in a direction over the pubes to the apex of the tumour, one foot two inches and three quarters. The whole of the penis was retracted within the integument covering the rupture; the opening through which the urine flowed very much resembled the navel, and this gave to the tumour the appearance of an immense umbilical hernia, extending over the pubes and falling down between the thighs. One of the testicles could be distinctly felt near the surface, about the middle of the tumour, but the other was not discoverable before the parts were dissected.

Although the rupture was so large as to extend generally over the pubes, and occupy both inguinal regions; it was easily ascertained, without making any incision, that the protruded parts came down through the left abdominal ring.

The examination was commenced by dissecting for the left inguinal canal, which was exposed, and part of the colon found passing through it greatly distended with feculent matter, but exhibiting no marks of inflammation or strangulation: the latter could not have taken place, the passage being so much dilated as to give the whole hand free admission into the cavity of the abdomen.

A semicircular cut was next made through the integument, following the course which the colon had taken downwards in the sac: this incision was continued some inches in length, when one of the testicles was exposed, and we were surprised by the sight of another distinct sac, very tense and containing fluid. By this we were led to suppose, that some portion of the intestine must also have protruded through the abdominal ring on the right side, forming a double kind of hernia. This part was again carefully examined, but no intestine could be traced to that side: besides, the surface of this second or supposed sac was too regular to contain either omentum or intestine; it formed the greatest bulk of the whole tumour, and more resembled a hydrocele, if it was possible to conceive one to attain a size so immense. By dissecting the integument from the surface, the apex of this second sac was found to be very thin, red, and pointed—in fact, appearing ready to burst: this inflamed part was accidentally ruptured, and about two quarts of very fetid urine was evacuated, which removed all doubt and previous uncertainty as to its nature.

By following down the course of the

urethra, which was wonderfully displaced from its natural situation, we discovered that the bladder of urine had protruded through the abdominal ring. Owing to the prejudices of the patient's friends, all the parts could not be brought away, so as to make a complete preparation shewing the relative situation which they observed to each other. The bladder was however removed from the body, and, upon examination of the prostrate gland, which was much enlarged, I found that it had been perforated by the catheter, in the ineffectual attempts made to draw off the urine. The diameter of the ureters was so much enlarged, as to admit my fore finger with great facility.

The abdomen presented no marks of acute inflammation having recently taken place ; the omentum was much loaded with fat, and the whole length of the colon was greatly distended with feculent matter.

In the pelvis there was nothing remarkable, excepting the want of the urinary bladder ; the natural connection which exists between that viscus and the inner surface of the pubes, was not to be discovered.

I have endeavoured to describe with accuracy the leading peculiarities of this case as

they appeared on dissection, and now shall offer some

REMARKS.

The hernia had not become *much* enlarged at the time of the patient's death, although, for a few days previous to that event, it appeared gradually to become more tense. The size of the tumour had varied but little during the space of twenty five years, and as the bladder formed the greatest proportionate share of its bulk, there can be no doubt that the urine contained in it had never been completely emptied from the time the viscus escaped from the pelvis and became lodged in the scrotum.

The bladder had been gradually accustomed to the quantity of urine contained, so that the excitability which naturally exists in it for the evacuation of its contents, was in a great measure lost or destroyed; and so long as the patient had the power of preventing an accumulation of water beyond a certain degree, he suffered no material inconvenience. But when that portion of the colon contained in the proper peritoneal sac became distended with hardened fæces, it must have pressed upon the neck of the bladder, and prevented the expulsion of the

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water; of which the stillicidium was only a symptom generally observed in every common case of retention of urine.

The patient's son informed me that his father could never make water without first raising the pendulous rupture from between his thighs towards his belly, then rolling it about for a short time the urine would pass in a full stream, although he always complained of his inability to make any considerable quantity at one time. This is easily accounted for;—by raising the tumour and pressing on its under surface, the bladder must have been brought more in a line with the displaced and curved direction of the urethra, and the urine being pressed from the bottom a certain quantity of it would necessarily be expelled.

It is a matter of surprise that the patient lived so many years with his bladder removed from its natural situation and lodged in the scrotum, without the production of some greater inconvenience than he appeared to suffer;—but I suspect that the protrusion took place by almost insensible degrees, so that the bladder and surrounding parts became gradually accustomed to each other, and the change in their relative positions.

I endeavoured to learn satisfactorily what was the primary history of the case, and ascertained that the hernia at its first appearance was very small, but slowly increased until it arrived at the immense magnitude before mentioned.

As different accounts of this uncommon species of rupture have been given by authors, and as the features of the present case do not correspond with the descriptions generally read, it may be of consequence to compare them, particularly as a modern surgeon of eminence expresses great doubts of the accuracy of the description, commonly given, “of the mode in which an inguinal cystocele is produced; and especially of the manner in which the protruded bladder is said to draw down consecutively the production of the peritoneum, forming a pouch for the reception of the other viscera.”

In the present instance, it was quite evident that the bladder had first protruded and drawn down with it a portion of the peritoneum which formed a sac for the reception of the colon.

If I can be justified in forming an opinion from the dissection of a solitary case, I am inclined to consider the account given by Mr.

Lawrence, of the manner in which a cystocele is usually produced, to be perfectly correct. He says, "If the bladder, either from being naturally large, or from having its capacity increased in consequence of retention of urine, is placed behind the ring when undistended, it may be propelled through the opening just as easily as any other of the abdominal contents. In this case, a portion of the anterior surface is first protruded; and, as this is connected by cellular substance to the surrounding parts, without possessing a peritoneal covering, the rupture in this stage possesses no hernial sac. When we observe the fundus of the bladder, in retentions of urine, rising to the umbilicus or higher, notwithstanding the cellular adhesions which unite it to the pubes, we shall conclude that these connections will not prevent the rupture from increasing under the continued action of the same causes which first produced it. The neighbouring part of the fundus, or side of the bladder, where it is covered by peritoneum, is gradually drawn through the ring, and forms a kind of hernial sac, which has a very different relation to the protruded part of the bladder, from that which the peritoneal covering bears to the contents of

an ordinary rupture. It forms a membranous cavity, ending below in a cul-de-sac, opening above into the abdomen, and lying in front of the bladder, to the anterior surface of which its posterior half closely adheres. The omentum or intestines may easily descend into this pouch, and thus an omental or intestinal rupture will be superadded to the hernia of the bladder."

Some writers have considered a cystocele to be a congenital mal-formation or position of the bladder, but in the present instance such could not have been the case, because the patient had no swelling of the scrotum, and suffered no inconvenience until he was past the age of thirty.

It is remarkable that he never had been subject to retention of urine previous to the rupture first occurring, and the urethra was perfectly healthy and unobstructed; from these circumstances, therefore, it would appear that the cystocele was not originally produced by retention of urine, or in consequence of the bladder becoming unusually distended.

It must be obvious that the bladder could never be protruded through the abdominal ring when largely distended with urine; but

its capacity is so much increased, and its coats become so flaccid by repeated retentions of urine, that when emptied it is in a state which renders it quite as liable to escape from its proper situation, as either the omentum or any part of the intestines.

In most of the cases of cystocele which have been recorded, one part of the bladder was found in the pelvis, and the other in the scrotum. In the present instance, there was a complete protrusion of the whole of the viscus, the coats of which were laminated, (so much so as to admit of division into six or seven layers,) excepting at one point, which, as I before observed, was thin and very much inflamed: if the patient had survived a few days longer, there is little doubt but this point would have ulcerated and given way.

It may appear extraordinary, that not more than a wine glass full of urine could be drawn off by the catheter, in the many attempts that were made; but I believe that the instrument, owing to its shortness, passed no further than the neck of the bladder, and consequently above the level of the greatest quantity of urine accumulated in it. If a long elastic gum catheter had been employed,

it is very probable that such an instrument would have accommodated itself to the depending situation of the bladder, and a large quantity of water have been drawn off, the evacuation of which would have afforded an insight into the nature of the affection, and suggested some effectual method for the relief of the patient.

ON SPINA BIFIDA.

CASE OF SPINA BIFIDA, IN WHICH THE
OPERATION OF PUNCTURING THE TUMOUR
WAS REPEATEDLY TRIED, BUT ULTIMATELY
PROVED FATAL.

Mary Evans requested me to examine her child, eleven weeks old, and give my opinion of the nature of a tumour, situated on the loins, presenting all the characters of that distressing affection called Spina Bifida. She informed me, that at the birth of the infant the tumour was not larger than a common-sized peach, but of late it had increased very rapidly, and appeared to produce some decided effect upon the health of the little sufferer. The child, in most respects, is remarkably well grown ;—the body and arms are in good proportion, but he is club-footed, the head is large, and the anterior fontanelle extends very low down upon the forehead :—he is, however, a very lively child, and, with the exception of the size of the head, has no other symptoms of hydrocephalus. The legs are not paralytic, which is proved by the child exercising voluntary controul over them, and crying when they are pinched : he also

appears to have the power of retaining both the urine and fœces.

The tumour now measures ten inches and a half in circumference, and six inches and a half in length. It is elastic and semi-transparent, and becomes more tense when the child coughs or cries. Its temperature is considerably above that of the surrounding integument. The colour of the tumour is varied: in the centre it is of a faint violet hue, at the sides it is of a dusky red. On one part, a congeries of small red vessels is seen; and upon enquiry, I learned that ulceration had taken place there, when the infant was a month old, but had not extended so deeply as to open the sac. The common healthy integument surrounds the base of the tumour, and extends upwards upon it to the distance of half an inch, when it appears suddenly to degenerate and become like a muddy-coloured bladder. No part of the fluid contained in the sac could be pressed out of it into the spinal column: at least, pressure upon it caused no diminution in the size, nor did the child during the attempt express or appear to suffer any uneasiness.

Knowing the formidable nature of the affec-

tion, that sooner or later it would terminate fatally if permitted to take its own course; and as one part of the tumour was exceedingly thin, and ulceration again threatening, I determined to afford the child the only probable chance for life, by puncturing it according to the method recommended by Sir Astley Cooper.

As the case was one of unusual occurrence and of extreme interest, I showed it to many of my professional friends, who concurred with me in opinion as to the propriety of the operation.

On the second of December the tumour was punctured. I selected a portion of what appeared to be the soundest integument, which was on the left side, and introduced through it a cataract needle into the sac. When the instrument was withdrawn, a fluid perfectly transparent and colourless followed, and about two ounces were evacuated; it then appeared to become more viscid, and I was obliged to enlarge the opening: at length, however, six ounces and a half were abstracted without producing any visible effect upon the patient.

The sac being completely emptied, I passed my finger along the vertebral column, in

order to make a more particular examination of the parts connected with the affection. When the finger came opposite to the second lumbar vertebra, there was evidently a deficiency of the spinous process of this as well as of the lower vertebræ, so that a wide canal was formed between them, which extended low down upon the sacrum. The wound was carefully closed with adhesive plaster, a compress placed on the seat of the tumour, and a flannel roller applied moderately tight over it.

December 3rd. Visited the child, and found that no particular symptoms had followed the operation. The sac is as full and tense as before the fluid was drawn off. The mother informed me that she was greatly surprised and even frightened on removing the child's cap a few hours after the operation, to find such a remarkable subsidence and diminution in the size of the head.

December 5th. The tumour was again opened. Previous to puncturing it I measured the child's head, and found its circumference sixteen inches and a quarter, and from ear to ear in the line of the lambdoidal suture nine inches and three quarters. Six ounces of limpid fluid were drawn off, the child

crying violently during the time of its abstraction. I was gratified to find the sac, when emptied, firmer and thicker in its texture than it was after the first operation. A compress was applied as before, and the roller drawn tighter over it. On measuring the head after the fluid had been evacuated, I found a difference of nearly an inch in each direction; the fontanelle, which was tense and prominent before, was converted into a depression, and the edges of the parietal bones were distinctly seen. I placed a roller firmly round the head, but desired that it might be removed if it appeared to produce any uneasiness.

December 8th. I again punctured the tumour, and abstracted seven ounces of fluid, the colour of which was much altered, having become of a pale red. The tumour itself was more opaque, and, when emptied, the sac felt considerably firmer than after the previous operations. The child has been very restless since the 5th: the head, although bandaged, was not found by measurement to be smaller than it was before the tumour was opened on that day. The fontanelle was prominent, but subsided immediately after the fluid had been drawn off. I placed a

firmer compress on the loins, and applied the roller tighter than before.

December 10th. The tumour was punctured this morning in the same manner as before. The fluid abstracted was reddish-coloured, and in quantity five ounces. The sac felt much thicker than on the 8th, and the child has been very well since the last operation.

December 11th. I was requested to visit the child early this morning, and found him dangerously ill: his breathing was hurried: the countenance anxious, and expressive of great suffering. The mother informed me, that he slept well for three hours after the fluid had been evacuated yesterday morning, and remained quite free from uneasiness during the day; but at night he became restless, cried violently, and apparently suffered some acute pain. The bowels had acted freely, and the secretion from the kidneys had been copious.

The difficulty of breathing does not appear to depend upon any inflammatory affection, but is more like a convulsive action of the chest and diaphragm. The pulse is not quicker than usual in infants of his age. The sac has partially filled since yesterday, but

does not, upon calculation and comparison with its former size, contain more than two or three ounces of fluid. The tumour has become quite opaque, and its colour is now uniform, but considerably deeper than that of the surrounding healthy integument.

In the evening he became more composed and slept for some hours, although the breathing continued laborious. In the morning of the 12th, a slight convulsion came on : he afterwards became comatose, and died about ten o'clock.

I examined the body on the following day, and paid particular attention to the state of the several organs, but could discover no unusual formation, nor morbid derangement.

There was not the least trace of inflammation to be found either in the thorax or abdomen, and the viscera belonging to these cavities were healthy and properly developed. The substance of the brain was softer than usual, and the lateral ventricles contained a small quantity of water.

The membranes of the spinal marrow, so far from exhibiting any appearance of inflammatory action having recently taken place, were less vascular than I have commonly observed them to be. The spinal marrow

seemed to be small in proportion to the bony canal formed by the vertebræ, and its external membrane, the prolongation of the dura mater, was not in close connection, but loose and separated from it by the fluid which had a free communication between the brain and tumour. The spinal column itself was perfectly formed from the atlas down to the second lumbar vertebra; but here a remarkable change was observed: this and also the lower vertebræ possessed no spinous processes, and wanted the arch of bone on which they are situated; so that a wide canal was formed, extending nearly to the bottom of the sacrum.

On opening the tumour and examining its inner surface, I found several layers of coagulable lymph, evidently of recent formation, attached to each other, and assuming very much the same appearance as the concentric layers seen on making a section of a true aneurismal sac.

The lumbar and sacral nerves, proceeding from that part of the spinal marrow which was connected with the sac, presented nothing unusual in appearance excepting that they were covered with a denser cellular coat, and were firmer in texture than those issuing

from the upper part of the spinal cord. The sacro-sciatic and anterior crural nerves in both limbs were as large as usual.

REMARKS.

Although the result of this case was unfavourable, it would not deter me from pursuing the same plan of treatment on another similar occasion; for I cannot agree in the opinion commonly expressed, that this affection is entirely beyond the reach of art..

When it is known that those who unhappily are the subjects of it either perish in their infancy or occasionally drag on a miserable existence until they arrive at manhood, any method that may be adopted for their cure or relief must be considered warrantable: and if all other authority were wanting, the fact of the one single successful case, related by Sir Astley Cooper, would justify every surgeon in making a similar attempt.

The dissection of the case, which I have just related, convinced me that as far as the tumour was concerned, great benefit had been derived from the punctures and repeated evacuation of the fluid.—The sac was much firmer in texture, and layers of coagulable

lymph had already formed and become attached to its inner surface. There is no reason, therefore, to doubt that the parts would eventually have become consolidated, and the membranes covering the spinal marrow so much contracted as to offer an effectual resistance to any quantity of fluid that might be secreted.

The reader must be aware that the present case was by no means favourable for the trial of puncturing the sac and drawing off the fluid, inasmuch as the tumour was unusually large, and the tendency to hydrocephalus very great, as proved by the secretion and evacuation of no less a quantity than twenty-five ounces of water in the course of seven days.

The rapidity with which the secretion of fluid took place, and its consequent distention of the sac, was very remarkable, for in less than six hours after each time of puncturing, the pad which had been placed in the depression became gradually elevated, although kept somewhat firmly in its situation by means of the roller.

I have before remarked, that after the evacuation of the fluid there was an alteration in the size of the head, which was made more

perceptible by the sinking of the anterior fontanelle: this part continued depressed until the sac on the loins was distended to its utmost extent, when the scalp covering the opening began slowly to rise, and the edges of the bones to be no longer visible.— This shews the free and uninterrupted communication between the ventricles and the spinal marrow, and the facility with which the fluid was transmitted from one to the other.

It appears to me that Mr. Cooper, in his excellent Surgical Dictionary, has not given quite a correct account of the manner in which the fluid finds a passage from the ventricles into the spinal canal. He says, “It has ever been recorded, that the enlargement of the head has undergone a considerable diminution when the tumour of the spine casually burst and discharged the fluid which it contained; a proof of some communication between the two parts. The fluid which was lodged in the lateral ventricle, and third ventricle, passed into the fourth, through the aquaductus sylvic, *ruptured* the calamus scriptorius, and thus got into the spinal canal.”

One part of this account is correct;—but
Y 2

there certainly is no necessity that a rupture of any portion of the brain should take place before fluid lodged in the fourth ventricle can find a passage into the spinal canal; because the sulcus, called *calamus scriptorius*, although closed in the adult, in the *foetus* is continued down as a canal through the substance of the spinal marrow. In some animals, as the otter and beaver, this sulcus always remains pervious, forming a ready communication between the brain and the spinal cord.

It has been recorded of almost every case of *spina bifida*, where the tumour was allowed to ulcerate and discharge its contents spontaneously, that the death of the patient immediately followed; surgeons, therefore, have been deterred from adopting any measures for the cure of this uncommon and dangerous affection.

But in my opinion, it is reasoning upon false principles to suppose that an artificial opening must be attended with the same result as follows the ulceration of the sac. Previous to ulceration, the tumour becomes inflamed and more distended, and the patient appears to be labouring under some general disturbance of the constitution, which ends

fatally soon after the tumour bursts and the fluid is discharged.

Cases have also occurred, where the sac has been ruptured by direct violence, and the patients have died almost immediately after the receipt of the injury. This is not to be wondered at, because the force necessary to rupture the sac would in all probability produce a concussion of the spinal marrow sufficient to account for death ; and more particularly if the tumour happened to be situated on any part of the spine higher up than the lumbar vertebrae.

But when the sac is carefully opened with a very fine instrument, and the accumulated fluid slowly and gradually drawn out, the patient is rendered free from the risk of any accidental injury to the part, as well as from the constitutional irritation produced by the distention and ulceration of the tumour.

The successful case related by Sir Astley Cooper is exceedingly valuable, as proving to what an extent the parts became changed by his judicious management ; and the dissection of the case now under consideration, proves the efforts of nature to produce a thickening and consolidation of the sac.

If the tendency to hydrocephalus could

have been counteracted, and the tumour been punctured at an earlier period, when its size was not greater than a hen's egg, I have every reason to believe that the operation would have been attended with success.

It will be admitted, that some slight analogy exists between the operation of puncturing the tumour in spina bifida, and perforating the cranium, as recently practised by Dr. Conquest, in cases of hydrocephalus ; inasmuch as the object is to evacuate a fluid contained within the same membranes ;— although the latter operation must be considered the more formidable, by reason of the necessity of wounding the substance of the brain itself.

When, however, it is known that Dr. Conquest, guided by correct principles, and acting upon them, has, in several instances, tapped the cranium for hydrocephalus, and that some of his operations have been attended with complete success, the fear of fatal symptoms inevitably resulting from the puncture of the sac, in spina bifida, ought no longer to deter surgeons from putting in practice the most effectual method of curing this distressing affection. In every instance, success is not to be expected ; but

if a single case in ten should recover, its result would be most gratifying to the operator, and at the same time would add one to the catalogue of those affections, hitherto considered beyond the reach of science, which have been cured by the judicious application of modern surgery.

CASE OF ANEURISM BY ANASTOMOSIS, IN
WHICH THE LIGATION OF THE VESSELS
BELONGING TO THE TUMOUR DID NOT RE-
TARD ITS GROWTH.—NECESSITY FOR EXTIR-
PATING THE WHOLE SUBSTANCE.

Anne Evans, an infant nine months old, whose parents lived in the neighbourhood of Llanfyllin, North Wales, was brought to Shrewsbury for my advice. She had a tumour on the forehead, which, in every respect, agreed with the account of that affection, first particularly described by Mr. John Bell, and termed by him Aneurism by Anastomosis.

The tumour was very prominent, of an oval shape, and, in circumference, rather larger than a shilling. At the birth of the child it was not half its present size; but during the last two months it has increased with great rapidity. The colour of the tumour was a deep purple. Gentle pressure upon it conveyed to the finger a vibratory pulsating feeling, but this sensation ceased when it was firmly compressed. Four large tortuous arteries were observed to run quite

superficially in the integument, and to enter the substance of the tumour at different angles.

As the whole diseased mass could not be extirpated without the removal of a large portion of integument from the forehead, where I had no opportunity of forming a flap, and as it would be attended with an unseemly mark, I determined to try the effect of ligatures upon those vessels through which the tumour apparently was supplied with blood.

Accordingly, I dissected with a very small scalpel, and exposed, close to the base of the tumour, first the two vessels leading to its upper part. They were in size nearly as large as a crow quill, and pulsated strongly. By means of a fine-eyed probe I passed under each vessel a single silk thread, which was drawn tight.

It was my intention to have included in ligatures the two arteries which were distributed to the lower part of the tumour, but the child cried so violently during the operation on the upper vessels, that, apprehensive of a convulsion ensuing, I was obliged for the present to desist.

Little change seemed to be produced in

the tumour, excepting that its pulsation was not so strong as it had been previous to the application of the ligatures.

On the following day, I dissected down to the two vessels entering into the lower part of the tumour, and passed a thread round them. I was anxious to witness the effect that would be produced on the tumour by the tying of these vessels. Its pulsation having entirely ceased, it immediately became more tense, of a darker colour, and appeared almost ready to burst.

On the day after the operation, on examining the tumour, I found that it had become much softer, and less prominent, and its colour not so livid. On the second day, a very perceptible change had taken place ; the tumour was quite flaccid, and its colour not many shades darker than the surrounding integument.

The ligatures separated from the vessels on the fifth day after their application. At this time, the tumour in appearance had degenerated into a fold of loose membrane, with scarcely any difference in its colour from the common integument. So far, I was inclined to consider the ligature of the vessels successful, and hoped that the remains of the

tumour would gradually be absorbed. In this expectation, however, I was disappointed; for on the second day after the separation of the ligatures, I found the purple colour, as well as the pulsation of the tumour, had returned. From this date it slowly increased, and in the course of nine days was as large, and its colour as deep, as it was previous to the operations. The four large vessels, however, were no longer perceptible, nor was the tumour itself so prominent; at least it did not rise so abruptly from the forehead.

The parents of the child seemed very anxious for the extirpation of the diseased part, which indeed was the only alternative left, after the failure of the method of curing it by means of the ligature.

In extirpating the tumour, although I made the incisions at a considerable distance from its base, where the integument did not appear to be more vascular than common, the hæmorrhage that followed was very alarming. I was obliged to tie several vessels, and afterwards to press a compress of dry lint in the wound, before the bleeding could be restrained.

The child was much exhausted after the

operation, but recovered perfectly in the course of a few days. The cavity of the wound was so deep that nearly seven weeks elapsed before it was filled up with healthy granulations.

REMARKS.

This is a case interesting in many particulars. Every other method, excepting that of complete extirpation, has generally failed in curing this affection; yet I was anxious to try the effect of ligatures on those vessels which were distributed to the tumour apparently for the purpose of nourishing it with blood. The effect, however, of tying these vessels, proved that they derived their origin *from* the tumour, and were not, as might at first have been supposed, distributed to it. Instead of being its supporters, they are to be considered as the channels through which its blood was conveyed away.

Those vessels, although large, very superficial, and pulsating strongly near the base of the tumour, appeared gradually to become smaller and recede from the surface; for at the temples, and on a line with the coronal suture, they were not to be distinguished. If the tumour depended upon them for its supply of blood, we should have expected it

to become flaccid immediately after they had been secured by the ligatures; but the contrary was the case; it was more distended and its colour assumed a darker hue.

The ceasing of the pulsation can only be accounted for in the following manner.—The eflux of blood from the tumour was for a time prevented by tying those vessels through which it was principally transmitted, the sac therefore became so much distended from within that no room was left for the contraction and dilatation of the arteries. The pulsation did not return until the activity of the smaller vessels had formed an anastomosing circulation between the tumour and the surrounding parts:—when a free egress for the blood had been established, the peculiar contractility of the tumour recommenced.

Although little information, as to the real nature of this affection, has been derived from examination of the tumours after they have been removed, (all of them appearing on dissection to consist of a congeries of vessels imbedded in a soft spongy mass), the present case would lead us to consider aneurism by anastomosis as a tumour possessing an independant vitality;—a kind of parasitical

excrecence;—the growth of which cannot be prevented or retarded by any other means than a complete extirpation of the whole substance. On the other hand, we have the authority of Mr. Travers, who cured an aneurism by anastomosis, situated in the left orbit, by tying the carotid artery. This case proves that the growth of the tumour may occasionally be checked, and the affection cured, by diminishing the supply of blood which it receives from some important vessel.

In all cases, however, where the tumour can be removed with safety, excision is to be preferred to any other method of treatment; and the necessity of it was strongly advocated by Mr. John Bell, who, in speaking of the affection, says, “The whole group of vessels must be extirpated.”

It should be recollect, in performing this operation, that the danger of hæmorrhage is great when the knife is laid very close to the base of the tumour; but if the incision be made at some distance round it, the quantity of blood lost will in general be trifling, and the bleeding easily restrained. The importance of this fact will be admitted, when we consider that the majority of opera-

tions for aneurism by anastomosis are performed on infants, or children at that delicate age when the loss of a small quantity of blood, if not proving immediately fatal, will lay the foundation for many distressing affections.

The profuse hæmorrhage which resulted from the extirpation of the tumour in the case I have related, (although the incisions commenced at a considerable distance from its base), can be accounted for only by the general increased vascularity of the surrounding integument, produced by tying those four large vessels, through which the blood had previously been freely transmitted. These principal vessels becoming obstructed, the smaller arteries belonging to the tumour gradually became more active, extended themselves, and conjointly performed the office of the four main trunks.

CASE OF
LITHOTOMY IN A FEMALE CHILD. -

During the time I had the care of the paupers in the House of Industry belonging to Shrewsbury, my attention was directed by one of the nurses to Mary Thomas, five years of age.

The nurse informed me that when the child was brought into the House she was in a state of great debility and emaciation, and ever since had complained of constant pain in her belly. She was also observed to cry violently when in the act of making water.

On examination, the external organs of generation and the skin between the thighs were found to be much excoriated, and in several places deeply ulcerated. In consequence of this, I was inclined to attribute the pain which the child suffered in the act of making water, to the urine coming in contact with, and irritating, the abraded surface. I therefore desired the nurse to pay particular attention to cleanliness, and ordered her to wash the parts with an astringent lotion, afterwards sprinkling them two

or three times daily with the Lapis Calaminalis.

In the course of a week or nine days, the excoriated parts were perfectly healed, and the redness and inflammation had disappeared, but the child still continued to suffer as great pain as before, and cried for a long time after making water. I then suspected that a calculus might be the cause of this pain and irritation, but having no sound, or proper instrument, at hand, I determined upon examining the bladder as far as I could with a common silver probe. As soon as it entered the bladder it struck upon a stone, which I discovered to be one of great size by passing the point of the instrument gradually over its surface, then round and underneath it.

The size of the stone was such as to preclude the possibility of extracting it whole through the urethra of so young a female, although mechanically dilated to its fullest extent; but I hoped to effect the dilatation of the canal to so great an extent as would allow the introduction of a pair of slender forceps with which the calculus might be seized, and, if friable, broken in pieces.

A bougie was introduced daily, until one

of the largest size passed with ease into the bladder. After the use of the bougies, prepared sponge tents were introduced into the urethra, but their expansion caused such excessive pain, that I was obliged to abandon them. The urethra, however, had become so far dilated that a pair of common polypus forceps passed without much difficulty into the bladder: but when I attempted to open the blades the child violently screamed, and apparently suffered as much pain as male children do when operated upon for the stone. The instrument was consequently withdrawn; but having procured a pair of forceps with longer blades, I introduced them on the following day, and succeeded in laying hold of the stone, which proved to be of so hard and compact a texture that it resisted every attempt to break it.*

The child suffered so much from this

* This would have been a favourable case for the trial of Baron Heurteboup's lithontriptic instruments, but it occurred in the year 1825, before the Baron's operations became known or practised in England. I consider the operation of lithotripsy advantageous only in such cases in which the operation by the knife is rendered objectionable by certain peculiar causes, as the great size of the calculus,—the age and constitution of the patient. In skilful hands it may frequently answer as a substitute for lithotomy; but, from the perusal of those cases which have been published, I think that it is never likely entirely to supersede that operation.

attempt, that I determined never to repeat it, but to perform the operation of lithotomy as soon as she was properly prepared for it, by regimen and a course of medicine.

Accordingly, on the 25th of July, in the presence of several professional gentlemen of the town and neighbourhood, I proceeded to the

OPERATION.

The child being placed in the same position as for lithotomy in the male subject, I first introduced Sir Charles Bell's largest sized male staff into the bladder, and placed it upon the stone, giving instructions to my assistant to retain it in that situation. With a large scalpel I made a long and free incision along the side of the vagina nearly down to the anus: the point of the knife was then passed into the urethra and carried onwards to the neck of the bladder, when the urine gushed out in a full stream. I next introduced the fore finger of my left hand into the bladder, and felt the calculus;—after ascertaining that the incision was sufficiently large to admit of its easy extraction, the forceps were introduced (my finger acting as director for the blades), and a stone larger than a pigeon's egg was immediately extracted. A

piece of oiled lint was placed lightly in the wound, and the patient removed to bed.

The performance of the operation occupied only a few seconds, and the child apparently suffered less from the incisions than from the previous attempts which were made to seize and break the calculus.

It would be useless to follow up and to describe minutely the details of this case; I shall, therefore, only observe, that in the course of sixteen days the wound was perfectly healed, and the child able to run about, suffering no inconvenience from the operation excepting the want of power to retain the urine.

She was taken from the House shortly afterwards, by her parents, and I lost all sight of her until last year, when I was happy to find that the *stillicidium urinæ* no longer continued to trouble her. The bladder, however, continues irritable, for the patient cannot allow any large quantity of urine to accumulate in it. In every other respect she is perfectly well.

REMARKS.

Cases of lithotomy in the female, are of rare occurrence, in consequence of the shortness and dilatability of the urethra allowing

calculi, of recent formation, to be expelled without much difficulty from the bladder.

We have the very best authority for believing that stones of great magnitude have been extracted from the bladders of adult females without the necessity of using the knife, and that the urethra has frequently been dilated to an almost incredible extent in order to admit their passage.

Considering the age of the girl, whose case I have related, it will be admitted that the calculus had a greater relative size in proportion to the bladder and the diameter of the urethra than any other case of stone on record, which was extracted through the dilated canal. A stone of nearly the same magnitude has been removed from the adult female, along the urethra which had been gradually dilated; nor can this create much surprise, because the capacity of the canal, which increases in proportion with the other parts of the body, would render its extraction, though difficult, not a matter of impossibility. When the reader knows that the urethra of this child was so far mechanically dilated that a pair of polypus forceps passed into the bladder, he will not accuse me of hastily using the knife, without having made a fair

and proper trial to extract the calculus through the urethra.

An objection to the use of the knife must always remain in cases of stone occurring in the female, because the power of retaining the urine is generally lost by the division of the neck of the bladder; and, in consequence of it, the patient is, for the remainder of her life, rendered liable to an affection the most distressing to female delicacy. But in the present instance, there was no alternative left; the child, unless relieved by the operation, would have continued to labour under so much irritation and suffering, that must eventually have undermined the constitution, and brought her to a painful and premature death.

I was surprised to find that the girl had, in a great measure, recovered the power of retaining the urine. The result of the case, therefore, proves that although a *stillicidium urinæ* may for a time be the consequence of a division of those muscular fibres which form the sphincter of the bladder, if the patient be young the parts will eventually recover their tone, and that distressing affection be removed.

I have seen one case of stone occurring in

an adult female, which, after great difficulty, was removed through the urethra ; but, either in consequence of the extreme dilatation of the canal, necessary to admit the passage of the calculus, or from some injury done to the neck of the bladder in extracting it, the woman could never afterwards exercise any voluntary power of retaining her water, but was constantly subjected to a *stillicidium urinæ*. This case, therefore, proves that when the female urethra is mechanically dilated beyond a certain extent, the power of retaining the urine is as much endangered as by a division of the canal and the sphincter of the bladder with a cutting instrument.

A TUMOUR OF AN UNCOMMON NATURE SITUATED IN THE BICEPS FLEXOR CUBITI.

In an early number of the Medical and Physical Journal, Mr. Symmonds, of Manchester, has related some cases of bony concretions formed in, and connected with, different parts of the body, which, from the obvious dissimilarity of structure, there could have been no previous or natural relationship.

The following case resembles in some particulars those published by Mr. Symmonds.

John Wheeler, a young man, by trade a shoemaker, consulted me respecting a tumour upon his arm, which latterly had produced much uneasiness, and, occasionally, severe pain. It was not very prominent ; was situated over the belly of the biceps flexor muscle ; was excessively hard, and conveyed to the fingers much the same feeling as the upper portion of a fractured patella when retracted by the action of the extensor muscles. Although apparently superficial, its lower surface was firmly attached to the muscle, and whenever the fore arm was bent

suddenly upon the humerus, the patient complained of acute pain.

On enquiring into the history of the case, the patient informed me that for many years he had a small "knot" on his arm, which, however, was not attended with any inconvenience. About two years previous to my seeing him, this substance began to increase, and during the last nine months its growth had been very rapid, although several applications had been made with the view of retarding it.

Having explained to the patient, that the tumour was of that peculiarly hard structure not likely to yield to any external application, I advised him to submit to its extirpation, as it totally incapacitated him from following his trade. But he dreaded the knife, and would not submit to any operation. I accordingly dismissed him, as I could not promise him relief by any other method. In the course of a few weeks, however, the patient returned, and desired me to operate.

As the integument was loose, and not adherent to the upper surface of the tumour, I made a rather long incision over it, and dissected down to its substance, which felt gritty under the knife. The edges of the

wound being then drawn asunder, I seized the tumour with my fingers, and endeavoured to elevate it from its situation, but I found it so firmly attached to the muscle that I was obliged to dissect deep into the fibres before its complete separation was effected. When removed, the lower part of the tumour was found to be of a conical shape, and very irregular, whereas the surface in contact with the integument was flat and rather smooth.

The sides of the incision were drawn together with adhesive plaster, and, when the dressings were removed, on the fifth day after the operation, the wound had healed by the first intention.

The examination of the tumour proved it to consist of a dense cartilaginous mass, intersected by, and for the most part composed of, particles, which I know not how to describe most accurately, whether by calling them of an osseous or calculous nature. The colour of these gritty particles was varied; in some parts they were as white as chalk, but in the centre of the tumour, of a yellow tinge. The tumour was not surrounded by any proper investing capsule; and in no part of it could I detect any appearance of vascularity; but portions of the

muscular fibres were so firmly attached to the irregularities of its lower surface, that it was with great difficulty they were separated:— the portions of flesh were imbedded in the crevices of the tumour and connected with it, much in the same manner as the pulp of the fruit is attached to the unequal surface of a peach stone.

ACCOUNT OF AN IMMENSE TUMOUR ATTACHED
TO THE LOWER JAW, AND EXTENDING NEARLY
TO THE CLAVICLE, THE REMOVAL OF WHICH
PRODUCED PARALYSIS OF ONE SIDE OF THE
FACE.—REMARKS ON SIR CHARLES BELL'S
IMPORTANT DISCOVERY OF THE FUNCTIONS
OF THE FACIAL NERVES.

I was consulted by Mrs. Pinches, an elderly person, upon the possibility of removing an enormous tumour situated below the angle of the jaw, and which occupied nearly the whole of the right side of the neck. The diseased mass had increased rapidly of late, and produced occasional dyspnœa by pressing upon the windpipe. This alarming symptom rendered its extirpation necessary, although the operation would be attended with considerable difficulty and danger.

The tumour was so large that it might be said to have formed connections with the whole upper part of the right side of the neck, extending from behind the mastoid process of the temporal bone to the centre of the chin. The depending lobe of the external ear was pushed upwards by the growth

of the tumour, which had increased so much in this direction as to completely close the meatus auditorius externus.

On examining the position of the larynx and trachea, I found that they were pressed very much to the left side; and the extreme lateral edge of the tumour, as far as it could be traced, was situated apparently over the right lobe of the thyroid gland. Below, it extended within two inches of the clavicle, and concealed every part except the origin of the sterno-mastoideus muscle.

The tumour itself felt puffy and yielding, and at one point was very prominent, projecting outwards at least four inches; I could not, however, after a very careful examination, discover any fluctuation in the contents. It admitted freely of motion from side to side, but in attempting to elevate its base I found great resistance, proving that the connections which it had formed with the parts below were strong and extensive. The integument covering the tumour was healthy, and not attached to any part of it; many small blue veins were seen beautifully intersecting each other and ramifying on the surface, but I failed to discover the course of the external jugular, and suppose that it must have been

obstructed by the pressure of the tumour from within.

The following history of the commencement and growth of the tumour was given by the patient. About nine years ago she perceived a small lump of the size of a horse-bean, situated in the side of her neck, midway between the jaw and the collar bone; it was perfectly moveable and free from pain. Many months elapsed without any sensible increase in size taking place, but having been informed that the swelling possessed all the characteristic marks of a wen, she became anxious for its removal, and used some irritating plaisters with a view to disperse it.

The tumour began gradually to enlarge:—its growth was unattended with pain or inconvenience, but was decidedly progressive, although frequent attempts were made to retard it by a variety of external applications. When about half its present size, she consulted a surgeon who recommended her not to think of its removal by the knife, as, in his opinion, the operation would be attended with great danger in consequence of its situation and probable connection with the blood-vessels and other important parts. This

advice received the approbation of the patient and her friends, who dreaded the performance of so formidable an operation; and the tumour was permitted slowly to increase, until it attained the magnitude which I have described. During the last two months its growth has been more rapid, attaining in that time a greater proportionate increase of size than had previously taken place in the course of a whole year. Besides the sudden enlargement of the tumour, and the consequent pressure upon the trachea, it had latterly been productive of great pain, and the patient became much alarmed for the consequences of its growth, which then appeared to have no probable or satisfactory limit.

I stated my opinion that the extirpation of the tumour was practicable, but that the operation would necessarily be painful, protracted, and not unattended with danger, the least of which would arise from hæmorrhage, as that could be effectually guarded against by cutting down upon the carotid artery, and placing a ligature round it, to be immediately drawn tight in case the bleeding should proceed to an alarming extent.

I had, however, great apprehensions for

the successful removal of the whole diseased mass in consequence of the firm attachments which the lower part of the tumour had formed with the muscles, and perhaps with the sheath of the carotid artery itself. I possessed no means of correctly deciding upon the strength or extent of these connections before using the knife, and it was impossible to determine with accuracy what important parts might be endangered.

From the situation and great extent of the tumour most of the superficial nerves of the neck would, in all probability, be severed or injured in attempting its extirpation, particularly the branches forming the superficial cervical plexus, and the descendens noni;—the main trunk of the portio dura, or the respiratory nerve of the face, was also liable to be torn through in detaching the tumour from the neighbourhood of the mastoid process.

The liability of injuring or destroying these different nerves, and the great irritation likely to follow so serious an operation, formed very important objections to any attempt that might be made to extirpate the tumour; but on the other hand, its removal was rendered absolutely necessary by the alarm-

ing rapidity of its later growth, and by the distressing symptoms consequent upon its enlargement.

THE OPERATION

was determined upon, and performed in the following manner. An incision, about eight inches in length, was made over the lower third of the tumour extending in a line from behind the ear across the sterno-mastoideus muscle, and terminating in a point over the centre of the windpipe:—another cut, of the same length, was then made across the upper third of the tumour, leaving an intermediate portion of integument of an elliptical form. By these incisions the skin and the platysma myoideus covering the tumour were freely divided. I afterwards proceeded to dissect the integument from the surface of the tumour, commencing at the line of the lower incision; but I was obliged to desist from using the cutting edge of the knife in consequence of the troublesome hæmorrhage that took place: the handle of the scalpel was therefore employed to separate the attachment of the platysma myoideus to the dense fibrous capsule by which the tumour was surrounded. This part of the operation was very severe and protracted, for some time

elapsed before the lower boundary of the tumour could be distinctly separated from the adjacent parts:—it was at length fairly exposed, and not much difficulty occurred in passing the handle of a scalpel underneath its edge, and by working it from side to side I was enabled to tear asunder the connections existing at this part between the muscles and the bottom of the tumour.

The depending part of the tumour having been elevated from its bed, and after tying four arteries, which had been divided in accomplishing this part of the operation, I proceeded to dissect the integument covering its upper part.

In detaching the tumour from the jaw the trunk of the facial artery was divided, but the hæmorrhage from it was immediately restrained by the application of a ligature:—a smaller vessel was also wounded behind the ear which required securing before I could proceed. In completing the operation, I trusted entirely to the handle of the scalpel and the points of my fingers, gradually tearing through the attachments of the tumour until I succeeded in effectually and safely removing it.

On examining the neck after the whole
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diseased mass had been extirpated, it presented a very frightful wound, extending from the thyroid cartilage to a point considerably behind the ear. The coagulated blood being removed, and the bottom of the wound carefully sponged, the muscles presented a very curious appearance, particularly the sterno-mastoideus, the belly of which was so much flattened and compressed, that all traces of its fibres were nearly obliterated. A similar change had also taken place in the sterno-hyoideus and sterno-thyroideus muscles; but the most remarkable effect of the growth of the tumour was evident in the altered form and size of the lower jaw. The upper part of the tumour was prevented from projecting outwards in consequence of the firm and unyielding nature of the fasciæ covering it, and in the progress of its enlargement the ramus of the jaw was subjected to gradually-increasing pressure, the effect of which produced very considerable absorption and decrease in the thickness of the bone.

Part of the submaxillary gland was exposed in the wound, and the inferior lobe of the parotid was laid bare. The tumour had formed stronger connections in the neighbourhood of the mastoid process than at any

other part from whence it was found necessary to detach it; and as the paralysis of one side of the face (to be noticed hereafter) was the result of the operation, no doubt exists in my mind that the trunk of the portio dura must have been lacerated.

The sides of the wound were drawn carefully together and retained in approximation by six sutures placed at equal distances from each other. Adhesive plaster was then applied, and the side of the neck was supported by compresses of lint and a well-adjusted bandage.

The patient became faint and exhausted towards the conclusion of the operation, which she endured throughout with the greatest patience and fortitude. A cordial was administered to her, and I left directions for an anodyne draught to be given in the evening.

The recovery of the patient proceeded in a most satisfactory manner; and, contrary to my expectations, I found that the wound had nearly healed by the first intention. The plasters were not removed until the fifth day after the performance of the operation, and there was no suppuration or discharge from the wound excepting what was produced by

the ligatures and the sutures.—Three of the former came away without any difficulty, but I did not think it prudent to attempt to separate the one placed on the trunk of the facial artery. The sutures were all cut out, and I trusted to the use of the adhesive plaster, as the state of the wound did not appear to require any other kind of dressing.

In the course of three weeks the parts had become firmly cicatrized, and my patient felt well satisfied with the result of the operation, although obtained at the expense of considerable deformity of the face, in consequence of injury done to the *portio dura*.

On examining the structure of the tumour, I found it composed of a white substance, of the consistence of udder-fat, surrounded by a dense fibrous capsule which varied in thickness and colour. In several parts the capsule was strengthened by membranous bands intersecting it, and binding down the contents of the tumour which rose up in the intermediate spaces much in the same manner (to use a familiar comparison) as the contents of a parcel rise up between the folds and crossings of the cord used to secure it.

After the tumour had been divided into two equal parts, I found that it gradually

increased in density from its centre, which was soft and pulpy, whereas its walls were formed of concentric layers of an udder-like substance, becoming stronger and more compact the nearer they approached the capsule in which they were enveloped.

APPEARANCE OF THE PATIENT'S FACE SIX MONTHS AFTER THE PERFORMANCE OF THE OPERATION.

A remarkable deformity exists in one side of the face, which is more observable when the patient attempts to perform certain muscular actions. The effort to smile or laugh causes a most ludicrous twist of the mouth, which is drawn very much to the left side, while the whole of the right cheek and the angle of the mouth remain in a quiescent and unexcited condition. By compressing the nose, and desiring the patient to hold her breath until the sense of suffocation becomes painful, it is curious to notice the difference in the state of the two nostrils: —the left ala nasi regularly contracts and dilates in concert with the other respiratory organs; but there is no action whatever discernible in the cartilaginous apparatus on the right side. When snuff is taken into the left nostril a striking difference is

observed between the two sides of the face preparatory to the act of sneezing:—the peculiar action of the muscles which precedes and accompanies the involuntary effort to dislodge the particles that irritate the schneiderian membrane is plain and distinct on the left side; but the muscles of the right cheek do not sympathize with their fellows on the opposite side.

The most distressing effect of the paralysis is observable in the state of the right inferior palpebra, which is drawn downwards, leaving the lower segment of the eyeball uncovered. The conjunctiva is red, and in parts thickened and granulated. In consequence of the altered situation of the puncta, the tears do not find an easy passage into the nasal duct, but flow over the cheek and produce a troublesome excoriation. The patient has the power of closing the eyelids by forcibly contracting the orbicularis muscle; but immediately this voluntary action ceases, the lower palpebra recedes from the ball of the eye and leaves it partially exposed.

The sensibility of the skin is not impaired. Tickling the surface with a feather produces an equal degree of irritation on the right as on the left side; and when the integument

is pinched, the acuteness of feeling is as perfect in the paralysed cheek as in the one that possesses its full share of nervous energy. The lower jaw on the right side remains in the same state as noticed in the account of the affected parts seen in the operation; and although the bone is free from all pressure, there seems to be no disposition to renew those parts which have been absorbed by depositing an increase of earthy matter. Besides the manifest difference in the size of the jaw, the whole of the right side of the face is smaller than the left:—the muscles have lost their fullness and fleshy character, and the skin hangs loose and flabby.

REMARKS ON SIR CHARLES BELL'S DISCOVERY
OF THE FUNCTION OF THE FACIAL NERVES.

No testimony is now wanting to confirm the correctness of Sir Charles Bell's opinions respecting the functions of the facial nerves; but the preceding ease will afford a convincing and practical elucidation of the important discoveries which he has made in this most interesting branch of physiology. It is to be presumed that few of my readers are unacquainted with the researches of that eminent surgeon, or are ignorant of the zeal and perseverance with which he has laboured to

unravel the intricacy of the nervous system ; but the value of his discoveries is so great, so important both to the physician and the surgeon, that they cannot be made too public, nor too frequently commented on.

In the remarks I shall venture to offer on the subject, it is my wish to direct the reader's attention more particularly to the consideration of the nerves of the face, as the difference of function of the fifth and seventh pairs is capable of illustration by the case of tumour just related.

The anatomist after dissecting the numerous branches given off from the three subdivisions of the fifth pair, and having minutely traced all the filaments derived from the *portio dura* of the seventh, is at a loss to account for the seeming intricacy and confusion. When he sees numerous twigs proceeding from the trunk of the *portio dura*, and spreading across the cheeks, for the purpose of being bestowed upon parts that are already plentifully supplied with branches from the fifth pair, he wonders why there should be such a liberal distribution of nerves to the muscles and integument covering the face. It was reserved for Sir Charles Bell to furnish a key, by means of which

the difference of function belonging to these nerves is clearly explained; and a subject that, previous to his researches, was difficult and uninviting, now becomes simple, and affords materials for very interesting and valuable speculations.

Before any practical deductions can be derived from the preceding case, it will be necessary to present the reader with a brief outline of the views entertained by Sir Charles Bell, and a summary of the conclusions he has drawn from a variety of facts and ingenious experiments. He was the first to discover the difference between the two sets of facial nerves, and to explain that they were dissimilar in structure, sensibility, and function. The following quotations from his book on the Nerves will be read with interest.

“ It is in the face that we have the best opportunity of observing the subservi-
ence of the nerves to the uses of the parts,
and of ascertaining the truth of the preceding
doctrines. The human countenance performs
many functions: in it we have combined the
organs of mastication, of breathing, of natural
voice and speech, and of expression. These
motions are performed directly by the will.

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Here also are seen signs of emotions, over which we have a very limited or imperfect controul; the face serves for the lowest animal enjoyment, and partakes of the highest and most refined emotions. Happily for our present object, the nerves, which, in other parts of the frame, are bound together for the convenience of distribution to remote parts, are here distinct, and run apart from each other until they meet at their extremities. They take different courses through the bones of the head, and come out upon the face, to be exposed in a manner which courts enquiry. —The nerves of the face are, first, the *trigeminus*, or the fifth of Willis; and that familiarly called the *portio dura* of the seventh, but which, in this paper, will be called the *respiratory nerve of the face.*”

“ OF THE TRIGEMINUS, OR FIFTH PAIR.

“ In all animals that have a stomach with palpi or tentacula to embrace their food, the rudiments of this nerve may be perceived; and always in the *vermes* that part of their nervous system is most easily discerned which surrounds the œsophagus near the mouth. If a feeler of any kind project from the head of an animal, be it the antenna of the lobster or the trunk of an elephant, it is

a branch of this nerve which supplies sensibility to the member. But this is only if it be a simple organ of feeling, and is not in its office connected with respiration.

“ From the nerve that comes off from the anterior ganglion of the leech, and which supplies its mouth, we may trace up through the gradations of animals a nerve of taste and manduction, until we arrive at the complete distribution of the fifth, or trigeminus in man. Here, in the highest link as in the lowest, the nerve is subservient to the same functions. It is the nerve of taste and of the salivary glands; of the muscles of the jaws, and of common sensibility. This nerve comes off from the base of the brain in so peculiar a situation, that it alone, of all the nerves of the head, receives roots both from the medullary process of the cerebrum and of the cerebellum. A ganglion is formed upon it near its origin, though some of its filaments pass on without entering into the ganglion. Before passing out of the skull, the nerve splits into three great divisions, which are sent to the face, jaws, and tongue. Its branches go minutely to the skin, and enter into all the muscles, and they are especially profuse to the lips.”

“ OF THE RESPIRATORY NERVE OF THE FACE,
BEING THAT WHICH IS CALLED PORTIO DURA
OF THE SEVENTH.

“ This nerve does not exist, except where there is some consent of motions established betwixt the face and the respiratory organs; and this is the reason of its circuitous and prolonged course. In fishes, this nerve, instead of being distributed forward to the face, passes backward to the muscles of the gills. In fact, there is properly no *portio dura* of the seventh in fishes, the nerve resembling it being a branch of the *par vagum*. A short description of this nerve in the human body, will be necessary to our enquiry.

“ The respiratory nerve of the face arises from the superior and lateral part of the *medulla oblongata*, close to the *nodus cerebri*, and exactly where the *crus cerebelli* joins the *medulla oblongata*. The other respiratory nerves, which form so distinguished a part of the nervous system, arise in a line with the roots of this.

The nerve, passing into the internal auditory foramen, is here embraced by the *portio mollis*; but it separates from it, and is received into an appropriate canal of the temporal bone. A little further on, and, while within

the temporal bone, two cords of communication are formed with the branches of the fifth nerve or *trigeminus*. One of these is called *vidian nerve*, and the other *corda tympani*. By these communications, nerves go in both directions: branches of the seventh are sent to the muscles at the back of the palate, while branches of the fifth nerve (and also of the sympathetic nerve) are brought into the interior of the ear.

“The respiratory nerve of the face, emerging through the stylomastoid foramen, divides into many branches, and these, diverging, spread to all the side of the face. First, a branch is sent to the muscles of the outward ear; another is sent under the angle of the jaw, to the muscles of the throat. The principal nerve then passes through the parotid gland, and comes upon the face. Here the branches continue to scatter, to go upwards upon the temple, and downwards upon the side of the neck, forming on the neck a superficial plexus. The principal branches, however, go forward to the muscles of the forehead and eyelids; a branch called superior facial is sent to the muscles of the cheek and the side of the nose; while an inferior facial branch is given to the angle

of the mouth, and the muscles which concentrate there."

After examining the difference in the origin and course of the nerves of the face, and having ascertained that the structure of the *trigeminus* and the *portio dura* is dissimilar, Sir Charles Bell was prepared to make some experiments in confirmation of the ideas he had previously entertained respecting their functions. It was during the time of my pupilage at the Windmill-street School of Anatomy, that his researches were prosecuted, and I witnessed all the experiments detailed in his work on the nervous system. Those experiments were so conclusive that they could not fail to carry conviction to every person who had the good fortune to be present when they were made; and if I had felt inclined to question the correctness of Sir Charles Bell's opinions respecting the function of the *trigeminus* and of the *portio dura*, the effect produced by dividing these nerves in several animals, was well calculated to remove the most obstinate scepticism.— The most careless observer must have noticed the excessive pain evinced by all the animals that were subjected to the operation of having

the branches of the *trigeminus* divided; and his surprise must have been great at witnessing their comparative insensibility when the *portio dura* was cut across.

“An ass being tied and thrown, the superior maxillary branch of the fifth nerve was exposed. Touching this nerve gave acute pain. It was divided, but no change took place in the motion of the nostril; the cartilages continued to expand regularly in time with the other parts which combine in the act of respiration.”*

Another “ass being thrown, and its nostrils confined for a few seconds, so as to make it pant and forcibly dilate the nostrils at each inspiration, the *portio dura* was divided on one side of the head; the motion of the nostril of the same side instantly ceased, while the other nostril continued to expand and contract in unison with the motions of the chest.”

“From these facts we are entitled to conclude that the *portio dura* of the seventh is the respiratory nerve of the face; that the motions of the lips, the nostrils, and the *velum palati* are governed by its influence, when the muscles of these parts are in

* Vide Bell on the Nervous System, Page 106.

associated action with the other organs of respiration. These passages to the lungs are membranous tubes, moved by muscles, which serve to expand and widen them, so that air may freely enter into the lungs. It is obvious that, to produce this, these muscles must have a consent with the other muscles of respiration, and move simultaneously with them ; and this is effected through the respiratory nerve of the face.”

“ The actions of sneezing and coughing are entirely confined to the influence of the respiratory nerves. When carbonate of ammonia was put to the nostrils of the ass whose respiratory nerve had been cut, that side of the nose and face where the nerves were entire, was curled up with the peculiar expression of sneezing ; but on the other side, where the nerve was divided, the face remained quite relaxed, although the branches of the fifth pair and the sympathetic were entire. The respiratory nerve of one side of the face of a dog being cut, the same effect was produced ; the action of sneezing was entirely confined to one side of the face.”

From the foregoing extracts, the reader will be prepared to understand the conclusions drawn by Sir Charles Bell from the

anatomy of the nerves of the face, and the different functions which they perform. He will learn to distinguish between the voluntary actions performed through the medium of the fifth nerves, and the involuntary actions dependant upon the influence of the portio dura, or the respiratory nerve of the face. I shall now endeavour to corroborate his sentiments by a reference to the state of Mrs. Pinches' face.

When we consider the firm attachment of the tumour to the mastoid process, there can be little doubt that the trunk of the portio dura was divided in the operation; and it is equally certain, that no branches of the fifth pair were injured, because the incisions did not extend in the direction of their situation. The paralysis, therefore, that ensued, must have been consequent upon some injury done to the portio dura, and its effect was most perceptible in all the muscles of the face subservient to respiration;—for, notwithstanding the distortion of the countenance is visible when the features are unexcited and in a passive state, its extent is more fully developed in the actions of sneezing, coughing, and smiling.

Mastication is performed equally well on
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both sides. It should be recollected that besides the muscles destined to move the jaw, for the purpose of mastication, the cheeks as well as the tongue are necessarily employed to present the portions of food to the action of the teeth. We know that the muscles of the cheeks are liberally supplied with branches of the fifth nerve which minister to the performance of all the voluntary actions; and that they also receive filaments from the *portio dura* of the seventh, which order the involuntary actions connected with respiration, and with the expression of the various emotions of the mind. In Mrs. Pinches' face there is no deficiency of voluntary power over the muscles when exercised for the purpose of mastication, but a peculiar distortion is evident when they are called upon to express certain emotions of the mind, and to act in concert with the respiratory organs.

The unimpaired sensibility of the skin on the right side of the face proves that the function of the *portio dura* is not to bestow acuteness of sensation. It is a peculiar property of this, as well as of the other respiratory nerves, not to be affected by external agents in the same manner as the

nerves of voluntary motion and sensation. The wisdom of this provision must be apparent, when we consider that the perfect and uninterrupted performance of the act of respiration is alone necessary to life; and that any embarrassemnt or temporary obstruction in breathing is attended with the most painful and distressing effects. If, therefore, the nerves which direct that uniform and associated action between the complex organs of respiration were endowed with common or exquisite sensibility, they would be liable to be acted upon by a variety of causes;—the vital act of respiration would be rendered uncertain; and the tenure of our existence become more frail than it even is.

I paid close attention to the patient when separating the tumour from its connections with the mastoid process, because, knowing that the trunk of the *portio dura* would most probably be severed or injured in the attempt, I was anxious to notice if any particular effect would be produced, and whether there would be any unusual expression or indication of severity of pain. It has been stated before, that the patient submitted to every part of the operation with the greatest fortitude, and no excess of suffering was evinced

when the tumour was detached from the mastoid process.

From having repeatedly witnessed experiments upon the fifth pair, and observed the acuteness of pain not so evident in the contractions of the muscles, as in the expression of the countenance, and rendered more striking by the moans of the animal at the moment any of the branches were divided; I am inclined to suppose that if the sensibility of the *portio dura* was equally keen, a person of the greatest resolution, and whose feelings are under the most perfect controul, would inevitably give some peculiar demonstration of suffering when this nerve was lacerated or injured.

My patient, however, gave no indication of pain; and if we admit the paralysis of the face as a proof of the laceration or division of the *portio dura*, we have reason to infer that the nerve itself does not posses acuteness of sensibility. The sensibility of the *portio dura*, like that of the other respiratory nerves, is of an appropriate nature; and although it does not convey to the sensorium the same painful feelings that are so clearly manifested by even touching the spinal nerves or the branches from the fifth pair, it is not to be

considered as insensible, (in the common acceptation of the term,) but on the contrary, as a nerve of the most extensive sympathy and responding immediately to the influence of its proper stimulus.

The preceding case may so far be considered as confirmatory of Sir Charles Bell's opinions respecting the function of the *portio dura*, since it proves that distortion of the countenance under certain circumstances, and paralysis of the lower eyelid, resulted from some injury sustained by the nerve. It is not so conclusive with regard to the fifth pair, as none of its branches were affected by the operation; but the sense of feeling remaining as perfect in the right as in the left cheek, we are entitled to conclude that the peculiar property of this nerve is to bestow sensibility upon the skin, as well as to order the voluntary action of those muscles to which it is distributed.

The detail of this case will be considered prolix, and the observations derived from it deemed, perhaps, too partial; but I have been anxious to afford a testimony (humble as it may be) to the correctness of one of the most useful discoveries ever made in the science of physiology. It is by the relation

of such cases, that we are made more particularly sensible of the advantages derived from a proper cultivation of anatomy and physiology. And they are not only interesting in a practical point of view, but afford also the most convincing tests for deciding upon the justness or fallacy of certain opinions.

During the last seven years, I have paid particular attention to paralytic affections; and from the number and variety of cases presented to my notice, I have been enabled to collect a mass of evidence which would substantiate, if necessary, the doctrines of Sir Charles Bell respecting the function of the *spinal* nerves. The investigation of the subject has been a source of great interest, and has led me to a close and searching observance of symptoms which otherwise would have escaped my attention. The advantage of possessing a correct knowledge of the whole nervous system, and of the sympathy between its several parts, is best appreciated by those who have felt the difficulty of deciding upon the probable termination of the affections, whether organic or functional, which the brain and the spinal marrow are liable to. The work of

Sir Charles Bell is recommended to all who desire to obtain that knowledge:—and the physician or surgeon, who studies it deeply and carefully, will be prepared to explain many curious phenomena connected with nervous affections, which hitherto have been involved in the most perplexing obscurity. The reader will find in the account of the difference between the common spinal and the respiratory nerves, that the former belong to almost the lowest class of animals, and that the latter are superadded as the organs become more complicated, until we arrive at the highest link in the chain of animated beings. In Man these respiratory nerves are more fully developed than in any other animal, in consequence of their ministering to the expression of the various emotions of the mind, as well as ordering the action of an intricate respiratory apparatus.

From a knowledge of the function of the *portio dura*, the subject of expression becomes more interesting; and if the labours of Sir Charles Bell extended no farther than to prove the difference between this nerve and the trigeminus, great advantage would be derived from them. The following quotations from his work on the Nervous system, bear

so happily upon the case of tumour just related, that I feel no hesitation in introducing them, as they will form the best possible conclusion to the remarks I have ventured to offer :

“ Were we to enquire no farther, and to rest content with the inference, that the two sets of nerves distributed to the face have distinct functions ; even this must prove useful both to the surgeon and physician. To the surgeon it must be useful in performing operations on the face, as well as in observing the symptoms of disease. If we have to plan an incision on the face, we must take especial care to avoid cutting the branches of the seventh nerve, for then there will be paralysis of the muscles supplied by that nerve. Whereas, if we divide the fifth nerve, though there may be more pain during the operation, and a defect of sensibility following it, no unseemly distortion will be produced. To produce paralysis as a consequence of an operation, which was meant to remove deformity, is a considerable mistake ; but even worse consequences may result from an ignorance of the distinct nature of these nerves ; if, trusting to the eyelids being supplied by branches of the

fifth nerve, a surgeon, in opening an abscess or cutting out a tumour, should divide the division of the seventh which goes to the eyelids, the consequence would be very unfortunate.—The eyelids thenceforward would stand apart, the eye would be permanently uncovered, and the cornea become opaque, and the vision of the eye be lost.

“By a knowledge of the distinct functions of the nerves of the face, combined with a knowledge of their roots or origins in the brain, we become better able to comprehend symptoms when they are consequent on disease in the bones, or in the base of the brain, or result from injury to the skull or brain, as in the case of gun-shot.

“To the physician, the facts ascertained in this paper must also be important: he will be better able to distinguish between that paralysis which proceeds from the brain, and that partial affection of the muscles of the face, when, from a less alarming cause, they have lost the controlling influence of the respiratory nerve. How often have I seen a gland affecting a branch of the *portio dura* mistaken for a disease in the brain itself, because it was not known that, although the fifth nerve was free, the

pressure on the seventh nerve was sufficient to paralyse the muscles of the side of the face. The disease of the bone at one time affecting the fifth nerve, and producing excessive pain of the face without paralysis; at another, affecting the seventh nerve, and inducing paralysis without pain, are now phenomena accounted for.

“ Cases of partial paralysis must be familiar to every medical observer. It is very frequent for young people to have what is vulgarly called a blight, by which is meant, a slight palsy of the muscles on one side of the face, and which the physician knows is not formidable.—Inflammation of glands seated behind the angle of the jaw will sometimes produce this; before these observations, it would have been said, that paralysis could not be so produced, because the parts are plentifully supplied by branches of the fifth nerve. All such affections of the respiratory nerve will now be more easily detected; the patient has a command over the muscles of the face, he can close the lips, and the features are duly balanced; but the slightest smile is immediately attended with distortion, and in laughing and crying the paralysis becomes quite distinct.

“ The knowledge of the sources of expression teaches us to be more minute observers. The author had lately to watch the breathing of an infant which had been several times restored from a state of insensibility. At length the general powers fell low, without any returning fit; insensibility and loss of motion stole over the frame; all but the actions excited by the respiratory nerves ceased; then each act of respiration was attented with a twitching of the muscles of the *ala nasi*, and of that muscle of the cheek which makes the dimple in smiling. It was then evident that the child could not recover; that all but the system of respiratory nerves had lost their powers.

“ There are conditions of the lungs, when the patient is in great danger, and yet the inflammation is not marked by the usual signs of pain and difficult motion of the chest. We shall see nothing but the twitching of those muscles of the face which are animated by the respiratory nerve. We see a certain unusual dilatation of the nostrils, and a constrained motion of the lips, which, with the change of voice, is just sufficient to give alarm, and indicate the patient’s condition. This is a state of the lungs very often pro-

duced after severe accidents, as gun-shot wounds, and after great surgical operations.

“ These circumstances are stated to prove, that the subject of expression is not foreign to medical studies ; and certainly, by attention to the action of the muscles of the face, we shall find the views drawn here from the anatomy farther countenanced. We learn, that smiling is an affection of the nerve of respiration on the muscles of the face, and that when laughter shakes the sides, it is only an extended and more convulsive action of the muscles produced by the same class of nerves. When to the paleness and coldness, and inanimation of grief, there is added the convulsive sob, and the catching of the throat, and the twitching of the lips and nostrils, we discover the same class of nerves to be affected, which, in crying, are only more obviously in operation, producing more violent contractions.”

F I N I S.



